PREPARED FOR:

Borough of Eatontown
47 Broad Street
Eatontown, New Jersey 07724

PREPARED BY:

T&M Associates
11 Tindall Road
Middletown, NJ 07748

TIER A MUNICIPAL
STORMWATER GENERAL PERMIT
NJDEP General Permit No. NJG0148008
Program Interest ID #190532

STORMWATER POLLUTION PREVENTION PLAN 2021 UPDATE

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

T&M PROJECT NO. ETWN-G2201
APRIL 2022

STORMWATER POLLUTION PREVENTION PLAN

QUICK REFERENCE GUIDE

SPPP FORM	PERMIT REQUIREMENT	FREQUENCY
Form 4	**Multiple Educational Activities (MINIMUM 12 POINTS – From 3 Categories)**	**ANNUALLY**
Form 5	Storm Drain Labeling	Long Term Ongoing Maintenance
Form 6	Outfall Mapping	Paper Submission – 01/01/2019 Digital Upload – 12/20/2020
Form 7	Illicit Connection (Dry Weather Flow Inspections)	Once Every 5 Years
Form 12	Street Sweeping (Applicable Municipal Streets)	MONTHLY
Form 12	Roadside Erosion Inspection and Repair	ONGOING
Form 13	**Catch Basin Inspection and Cleaning**	**ONCE EVERY 5 YEARS**
Form 13	Stormwater Facility (Public & Private) Inspection and Cleaning	ONGOING AS NEEDED
Form 14	**Outfall Pipe Stream Scouring**	**ONCE EVERY 5 YEARS**
Form 16	**Vehicle Fueling SOP Vehicle Maintenance SOP Vehicle Washing SOP (If Applicable) Good Housekeeping Practices SOP**	**MONTHLY INSPECTIONS**
Form 16	Source Material Inventory	UPDATE ANNUALLY (As Needed)
Form 17	**Employee Training Program**	**ANNUALLY (Stormwater Facility & Maintenance Yard Ops) BIANNUALLY (All Other Topics)**
Form 18	TMDL Information	ONGOING AS NEEDED
N/A	Annual Report & Certification	ANNUALLY

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1 – Municipal Stormwater Management Plan and Stormwater Control Ordinance

2 – Major Development Stormwater Summary Report Form

3 – Local Public Education Program
- NJDEP Stormwater Brochure
- Sample Ordinance Education Letter
- Other NJDEP Educational Brochures

4 – Maintenance and DPW Yard Operations Program
- Street Sweeping
- Stormwater Facility Maintenance
- BMPs for Maintenance Yard and Other Ancillary Operations
- Vehicle and Equipment Fueling Standard Operating Procedures
- Vehicle Maintenance Standard Operating Procedures
- Good Housekeeping Practices Standard Operating Procedures
- Maintenance Yard Inventory

5 – 2005 Stormwater Pollution Prevention Plan Forms

SPPP Signature Page

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Edward Herrman, P.E., Borough Engineer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

"I certify that this SPPP includes all of the information and items identified in Attachment A of the Tier A Municipal Stormwater General Permit. All attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information."

Edward W. Herrman

(Signature)

4/30/2022

(Date)

Edward Herrman, P.E.

(Print Name)

Borough Engineer

(Title)

(NOTE: A new SPPP signature page should be attached each time the SPPP is updated or modified, excluding data entries. Previous SPPP signature pages shall be retained as part of the SPPP.)

Tier A Municipal Stormwater Regulation Program

Stormwater Pollution Prevention Team Members

Number of team members may vary.

Completed by: *Edward Herrman, P.E.*
Title: *Borough Engineer*
Date: *April 30, 2022*
Municipality: *Borough of Eatontown*
County: *Monmouth*
NJPDES #: *NJG0148008*
PI ID #: *190532*

Stormwater Program Coordinator: *Edward Herrman, P.E.*
Title: *Borough Engineer*
Office Phone #: *(732) 671-6400 ext. 9483*
Emergency Phone #: *Same as above*

Public Notice Coordinator: *Julie Martin*
Title: *Borough Clerk*
Office Phone #: *(732) 389-7600*
Emergency Phone #: *Same as above*

Post-Construction Stormwater Management Coordinator: *Edward Herrman, P.E.*
Title: *Borough Engineer*
Office Phone #: *(732) 671-6400 ext. 9483*
Emergency Phone #: *Same as above*

Local Public Education Coordinator: *Keith Ferrugia*
Title: *Director of Public Works*
Office Phone #: *(732) 389-7651*
Emergency Phone #: *Same as above*

Ordinance Coordinator: *Andrew Bayer, Esq.*
Title: *Borough Attorney*
Office Phone #: *(732) 405-3686*
Emergency Phone #: *Same as above*

Public Works Coordinator: *Keith Ferrugia*
Title: *Director of Public Works*
Office Phone #: *(732) 389-7651*
Emergency Phone #: *Same as above*

Employee Training Coordinator: *Janaea Morgan*
Title: *Human Resources Officer*
Office Phone #: *(732)389-7621*
Emergency Phone #: *Same as above*

Other:
Title:
Office Phone #:
Emergency Phone #:

SPPP Form 2 - Public Notice

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Julie Martin, Borough Clerk

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Briefly outline the principal ways in which you comply with applicable State and local public notice requirements when providing for public participation in the development and implementation of your stormwater program.

The Borough of Eatontown provides public notice of meetings as required by the Open Public Meetings Act ("Sunshine Law," N.J.S.A. 10:4-6 et seq.) and as required by N.J.S.A. 40:49-1 et. seq. for the passage of ordinances. The Borough will also provide public notice for municipal actions where necessary, for example in the adoption of applicable stormwater related ordinances or in the re-adoption of the stormwater management plan in subsequent re-examinations. All public notices will be in accordance with Municipal Land Use Law (N.J.S.A. 40:55D-1 et. seq.).

Copies of the Stormwater Pollution Prevention Plan (SPPP), the adopted Municipal Stormwater Management Plan and Ordinance, and the community wide ordinances (pet waste, wildlife feeding, litter control, improper disposal of waste, yard waste program, illicit connections, and private storm drain inlet retrofitting) have also been posted on the Borough's website for review by the public.

Starting January 1, 2019, the Borough will also provide public notice to all public involvement projects pertaining to stormwater education and outreach activities either on the municipality's website, through a mass mailing, through an advertisement in the Borough newspaper of record or through other similar means.

SPPP Form 3 - New Development and Redevelopment Program

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Edward Herrman, P.E., Borough Engineer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe in general terms your post-construction stormwater management in new development and redevelopment program (post-construction program), and how it complies with the Tier A Permit minimum standard. This description must address compliance with the Residential Site Improvement Standards for stormwater management; ensuring adequate long-term operation and maintenance of BMPs (including BMPs on property that you own or operate); design of storm drain inlets (including inlets that you install); and preparation, adoption, approval, and implementation of a municipal stormwater management plan and municipal stormwater control ordinance(s). Attach additional pages as necessary. Some additional specific information (mainly about that plan and ordinance(s)) will be provided in your annual reports.

The Borough's post-construction stormwater management program for new development and redevelopment projects is as follows:

1. The Borough's Planning and Zoning Boards will ensure that plans for all new residential development and redevelopment projects, subject to the Residential Site Improvements Standards (RSIS), are in compliance with the Stormwater Management Regulations (including NJAC 7:8) prior to issuance of final subdivision or site plan approvals under the Municipal Land Use Law.

2. Borough representatives will ensure continued compliance of all private developments with the approved subdivision plans, and applicable ordinances, as well as, long term operation and maintenance plans of approved BMPs on private property. The Director of Public Works will be responsible for appropriate long-term operation and maintenance of BMP's on Borough property and will monitor private BMP's as needed to ensure proper operation and maintenance is being conducted in accordance with approved operation and maintenance plans.

SPPP Form 3 - New Development and Redevelopment Program (Continued)

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Edward Herrman, P.E., Borough Engineer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe in general terms your post-construction stormwater management in new development and redevelopment program (post-construction program), and how it complies with the Tier A Permit minimum standard. This description must address compliance with the Residential Site Improvement Standards for stormwater management; ensuring adequate long-term operation and maintenance of BMPs (including BMPs on property that you own or operate); design of storm drain inlets (including inlets that you install); and preparation, adoption, approval, and implementation of a municipal stormwater management plan and municipal stormwater control ordinance(s). Attach additional pages as necessary. Some additional specific information (mainly about that plan and ordinance(s)) will be provided in your annual reports.

1. The Borough's Planning Board will continue to ensure all plans for new development and redevelopment projects incorporate the new design of storm drain inlets. The Borough Engineer will ensure proper installation of said inlets and the Director of Public Works will be responsible for proper maintenance and/or retrofit of existing and new inlets. The Borough Engineer and Construction Official will ensure that any existing storm drain on private property in direct contact with a repaving, resurfacing, reconstruction or alteration will be retrofit to prevent discharge of solids and float-able to the Borough's Storm System. The Borough Code Enforcement Officer will ensure that all dumpsters are covered.

2. The Borough's Municipal Stormwater Management Plan and Stormwater Control Ordinance have been completed and adopted in accordance with NJDEP's requirements and final copies have been reviewed and approved by the Monmouth County Planning Board. Copies of both the plan and ordinance are included in Appendix 1 of this report and are also available for review and download on the Borough's website. The Municipal Stormwater Management Plan will be updated as needed as part of the re-examination of the Borough's master plan.

3. All new plans for new development and redevelopment projects are reviewed by the appropriate personnel for compliance with the design and maintenance measures adopted. Additionally, starting January 1, 2019, the Borough and/or their representatives will complete, update, finalize and maintain a "Major Development Stormwater Summary" for applicable structural and non-structural stormwater measures proposed. A copy of the summary report is included in Appendix 2 of this report.

SPPP Form 4 - Local Public Education Program

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Local Public Education Program

Describe your Local Public Education Program. Be specific on how you will distribute your educational information, and how you will conduct your annual event. Attach additional pages with the date(s) of your annual mailing and the date and location of your annual event.

In accordance with the MS4 Permit requirements, the Borough must conduct various public education activities and accumulate a minimum of 12 points worth of activities within a permit year (January 1st through December 31st). A complete list of activities and their corresponding points is provided in Appendix 4 of this report. The Borough is required to select activities from at least three of the five categories provided. Based on a review of activities provided, the Borough will conduct the following:

Category 1 – General Public Outreach (1 POINT)

1. **WEBSITE** – Maintain a stormwater related page on the municipal website or on a municipal social media site. The web page may include links to other stormwater related resources, including the NJDEP stormwater website (www.njstormwater.org). (1 POINT)

Category 2 – Targeted Audiences Outreach (5 POINTS)

1. **STORMWATER DISPLAY** - Present a stormwater related display or materials at any municipal event (e.g., Earth Day, town picnic), at the municipal building or other similar public venue. (1 POINT)
2. **PROMOTIONAL ITEM** - Distribute an item or items with a stormwater related message (e.g., refrigerator magnets, temporary tattoos, key chains, bookmarks, pet waste bag dispensers, coloring books, and pens or pencils). Municipality must initially have available a minimum number of the items equal to 10% of the municipal population. (2 POINTS)
3. **MAILING CAMPAIGN** - Distribute any of the Department's educational brochures, tip cards, or a municipally produced equivalent (e.g., community calendar, newsletter, or recycling schedule) via a mailing to every resident and business in the municipality. (2 POINTS)

Category 3 – School / Youth Education Activities (3 POINTS)

1. **CLEAN UP** - Sponsor or organize a litter clean up for a scout troop, local school district, faith-based group or other community youth group along a local waterway, public park, stormwater facility, or in an area with storm drains that discharge to a local lake or waterway. (3 POINTS)

Category 4 – Watershed / Regional Collaboration (3 POINTS)

1. **GREEN INFRASTRUCTURE WORKSHOP** - Organize or participate in a rain barrel, rain garden or other green infrastructure workshop on a regional or watershed basis. This could be a partnership exercise with a local watershed organization, utility, university, school, youth/faith-based group, and/or other organization. (3 POINTS)

Category 5 – Community Involvement Activites (3 POINTS)

1. **RAIN BARREL WORKSHOP** - Organize or participate in a rain barrel workshop. This could be a partnership exercise with a local watershed organization, university, school, youth/faith-based group, and/or other nonprofit. (3 POINTS)

Additional activities will be evaluated and coordinated as needed throughout the year. See Appendix 3 of this report.

SPPP Form 5 - Storm Drain Inlet Labeling

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Storm Drain Inlet Labeling

Describe your storm drain inlet labeling program, including your labeling schedule, the details of your long-term maintenance plan, and plans on coordinating with watershed groups or other volunteer organizations.

Labeling of all existing Borough owned storm drain inlets and catch basins has been completed. This includes all inlets along sidewalks that are adjacent to Borough streets and inlets within plazas, parking areas or maintenance yards operated by the Borough. Labels used include the metal round markers entitled “NO DUMPING - DRAINS TO WATERWAYS”.

Periodic inspection and maintenance is conducted by Borough public work employees throughout the year during their maintenance and annual storm drain inlet cleaning program. Markers are checked to ensure they are visible and firmly attached to the inlet/catch basin head or casting. If necessary, Borough personnel will report any replacement needed and work orders will be generated to replace the missing or damaged markers. New inlets and catch basins are replaced with castings already marked in accordance with NJDEP requirements.

Records of the date and location of repair made is maintained separately by the Borough’s Public Work Department.

SPPP Form 6 - MS4 Outfall Pipe Mapping

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Explain how you will prepare your map (include its type and scale, and the schedule for the mapping process). Who will prepare your map (e.g., municipal employees, a consultant, etc.)?

In the 1990's, the Borough completed a stormwater system map under the Sewage Infrastructure Improvements Act (SIIA). Borough representatives field verified outfalls and updated the existing map as needed.

The Borough has updated their existing mapping and collected digital data for their outfalls in accordance with the permit renewal requirements. Data collected has been uploaded to the NJDEP by December 21, 2020.

Outfalls identified are provided with alpha-numeric identifiers. Mapping is updated as necessary as new drainage construction projects are completed.

SPPP Form 7 - Illicit Connection Elimination Program

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe your Illicit Connection Elimination Program and explain how you plan on responding to complaints and/or reports of illicit connections (e.g., hotlines, etc.). Attach additional pages as necessary.

The Borough will continue to inspect its outfalls for signs of dry weather flow. All outfalls will be inspected a minimum of once every 5 years using the NJDEP's Illicit Connection Inspection Report Forms. Outfalls that are found to have a dry weather flow or evidence of an intermittent non-stormwater flow will be re-inspected.

If an illicit connection is identified and located, the responsible party will be cited for being in violation of the Borough's Illicit Connection Ordinance and the connection will be eliminated. If, after three investigation attempts, the illicit connection is not found, a Closeout Investigation Form will be prepared and submitted along with the Borough's Annual Inspection and Recertification Report. Illicit connections found to originate from another public entity will be reported by the Borough to the affected entity and the NJDEP.

The appropriate paperwork is being maintained by the Borough's Public Work Department as needed.

Presently, residents may contact either the Public Works Department or Police Department to report any spills, leaks of hazardous materials, or possible illicit connections.

Illicit Connection Inspection Report Form

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Outfall #:_____ Location:_____

Receiving Waterbody: _____

1. Is there a dry weather flow? Y ( ) N ( )
2. If "YES", what is the outfall flow estimate?_____gpm
   (flow sample should be kept for further testing, and this form will need to be submitted with the Annual Report and Certification)
3. Are there any indications of an intermittent flow? Y ( ) N ( )
4. If you answered "**NO**" to BOTH questions #1 and #3, there is probably not an illicit connection and you can skip to question #7.
   (NOTE: This form **does not** need to be submitted to the Department but should be kept with your SPPP.)

   If you answered "**YES**" to either question, please continue on to question #5.
   (NOTE: This form will need to be submitted to the Department with the Annual Report and Certification.)

5. **PHYSICAL OBSERVATIONS**:

(a) ODOR:

(b) **COLOR**:

(c) **TURBIDITY**:

FLOATABLES:

(e) **DEPOSITS/STAINS**:

VEGETATION CONDITIONS:

(g) **DAMAGE TO OUTFALL STRUCTURES**:

IDENTIFY STRUCTURE:

DAMAGE:

6. **ANALYSES OF OUTFALL FLOW SAMPLE:**

* field calibrate instruments in accordance with manufacturer's instructions prior to testing.

(a) **DETERGENTS**:_____mg/L

(if sample is greater than 0.06 mg/L, the sample is contaminated with detergents [which may be from sanitary wastewater or other sources]. Further testing is required, and this outfall should be given the highest priority.)

(if the sample is not greater than 0.06 mg/L and it does not show physical characteristics of sanitary wastewater [e.g., odor, floatables, and/or color] it is unlikely that it is from sanitary wastewater sources, yet there may still be an illicit connection of industrial wastewater, rinse water, backwash or cooling water. Skip to question #6c.)

(b) AMMONIA (as N) TO POTASSIUM RATIO:_____

(if the Ammonia to Potassium Ratio is greater than 0.6:1, then it is likely that the pollutant is sanitary sewage)

(if the Ammonia to Potassium Ratio is less than or equal to 0.6:1, then the pollutant is from another washwater source.)

(c) FLUORIDE:_____mg/L

(if the fluoride levels are between 1.0 and 2.5 mg/L, then the flow is most likely from fluoride treated potable water.)

(if the sample tests below a detection limit of 0.1 mg/L for fluoride, it is likely to be from groundwater infiltration, springs or streams. In some cases, however, it is possible that the discharge could originate from an onsite well used for industrial cooling water, which will test non-detect for both detergents and fluoride. To differentiate between these cooling water discharges and groundwater infiltration, you will have to rely on temperature.)

(d) TEMPERATURE:_____°F

(if the temperature of the sample is over 70°F, it is most likely cooling water)

(if the temperature of the sample is under 70°F, it is most likely from ground water infiltration)

7. Is there a suspected illicit connection? Y ( ) N ( )

   If "**YES**", what is the suspected source? _____

   If "**NO**", skip to signature block on the bottom of this form.

8. Has the investigation of the suspected illicit connection been completed? Y ( ) N ( )

   If "**YES**", proceed to question #9.
   If "**NO**", skip to signature block on the bottom of this form.

9. Was the source of the illicit connection found? Y ( ) N ( )

   If "**YES**", identify the source. _____

   What plan of action will follow to eliminate the illicit connection? Resolution:

   If "**NO**", complete the Closeout Investigation Form and attach it to this Illicit here is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

Inspector's Name: _____

Title: _____

Signature:_____ Date: _____

If there is a dry weather flow or evidence of an intermittent flow, be sure to include this form with your Annual Report and Certification.

If there is not a dry weather flow or evidence of an intermittent flow, this form should be retained with your SPPP.

Closeout Investigation Form

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Outfall #:_____ Location:_____

Receiving Waterbody: _____

Basis for Submittal:

( ) A non-stormwater discharge was found, but no source was located within six months.

( ) An intermittent non-stormwater discharge was observed, and three unsuccessful investigations were conducted to investigate the discharge while it was flowing.

Describe each phase of your investigation, including dates. Attach additional pages as necessary:

Inspector's Name: _____

Title: _____

Signature:_____ Date:_____

Complete and attach this form to the appropriate Illicit Connection Inspection Report Form and submit with the Annual Report and Certification.

SPPP Form 8 - Illicit Connection Records

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

January 1, 2018 – December 31, 2018

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? NA

Number of outfalls found to have a dry weather flow? NA

Number of outfalls found to have an illicit connection? NA

How many illicit connections were eliminated? NA

Of the illicit connections found, how many remain? NA

January 1, 2019 – December 31, 2019

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? NA

Number of outfalls found to have a dry weather flow? NA

Number of outfalls found to have an illicit connection? NA

How many illicit connections were eliminated? NA

Of the illicit connections found, how many remain? NA

January 1, 2020 – December 31, 2020

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? NA

Number of outfalls found to have a dry weather flow? NA

Number of outfalls found to have an illicit connection? NA

How many illicit connections were eliminated? NA

Of the illicit connections found, how many remain? NA

January 1, 2021 – December 31, 2021

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? NA

Number of outfalls found to have a dry weather flow? NA

Number of outfalls found to have an illicit connection? NA

How many illicit connections were eliminated? NA

Of the illicit connections found, how many remain? NA

SPPP Form 9 - Yard Waste Collection/Ordinance Program

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Please describe your yard waste collection program. Be sure to include the collection schedule and how you will notify the residents and businesses of this schedule. Attach additional pages as necessary.

The Borough currently posts on their website and distributes an annual newsletter to all residents and businesses a newsletter/annual calendar that outlines the Borough's recycling and yard waste collection system and clean-up procedures. A collection schedule is also included.

The Borough's yard waste collection program consists of weekly pickups from October to December (FALL PICKUP) and from March to September (SPRING PICKUP). During this period non-containerized leaves are collected. Collection is conducted from the west side of Highway 35 to the east side of Highway 35. During FALL PICKUP, collections will occur weather permitting.

The Borough currently mandates that residents place all items for collection in a location that does not obstruct the storm drains. The Borough has modified this mandate to specify that no item shall be placed within 10 feet of a storm drain and no earlier than seven days prior to a scheduled pickup unless the yard waste is bagged or otherwise containerized.

SPPP Form 10 - Ordinances

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Andrew Bayer, Esq., Borough Attorney

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

For each ordinance, give the date of adoption. If not yet adopted, explain the development status:

Pet Waste Adopted on 12/14/2005

Are information sheets regarding pet waste distributed with pet licenses? Y (X) N ( )

Records of the dates the pet waste brochure is distributed will be maintained and the information will be provided to the Borough DPW Director as needed to include in the Borough's Annual Inspection and Recertification Report.

Litter Adopted on 12/14/2005

Improper Waste Disposal Adopted on 12/14/2005

Wildlife Feeding Adopted on 12/14/2005

Yard Waste Adopted on 12/14/2005

Illicit Connections Adopted on 12/14/2005

How will these ordinances be enforced?

Local code enforcement/zoning officers will enforce these ordinances. If someone violates one of these ordinances, they will be given a warning before a summons is issued for the violation.

Records of violations issued are maintained by the Borough and reported as needed to the NJDEP in the Borough's Annual Inspection and Recertification Report.

SPPP Form 11 – Storm Drain Inlet Retrofitting

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

What type of storm drain inlet design will generally be used for retrofitting?

The Borough utilizes NJDOT bicycle safe grates and Campbell Foundry Type N-ECO curb piece or equal.

Repaving, repairing, reconstruction or alteration project name	Projected start date	Start date	Date of completion	# of storm drain inlets	# of storm drains w/ hydraulic exemptions
2019 Eatontown Road Program	05/01/20	05/25/20	09/04/20	39	
Malibu Drive Resurfacing	05/01/20	05/25/20	09/04/20	23	

Are you claiming any alternative device exemptions or historic place exemptions for any of the above projects? Please explain:

The Borough's Engineer will maintain a list of Capital Improvements Projects and the number of inlets and/or catch basins being replaced. Quantities will be reported annually in the Borough's Annual Inspection and Recertification Report. No exemptions have been requested to date. In the event one is needed documentation will be provided in accordance with NJDEP requirements.

SPPP Form 12 – Street Sweeping and Road Erosion Control Maintenance

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Street Sweeping

Please describe the street sweeping schedule that you will maintain.
(NOTE: Attach a street sweeping log containing the following information: date and area swept, # of miles swept and the total amount of materials collected.)

Based on NJDEP requirements and a review of the Borough zoning map, several streets adjacent to Industrial Way West will require monthly sweepings. These areas include the following:

- Hope Road (from Industrial Way West to Wyckoff Road)
- Corbett Way, James Way, Christopher Way, and Frankel Way
- Meridian Road, Parker Road, and Wall Street (from Parker Road to dead end)
- Industrial Way West (from Hope Road to Route 35)

The Borough will also continue its existing sweeping program which includes sweeping all roads at least three times a year. Spoils are collected and dumped in 10 cy containers placed throughtout the Borough during sweeping activities. Once sweeping is completed, the containers are disposed offsite at the Monmouth County Reclamation Center.

See Appendix 4 for additional information. Records of the sweepings collected and the dates are maintained by the Borough DPW.

Road Erosion Control Maintenance

Describe your Road Erosion Control Maintenance Program, including inspection schedules. A list of all sites of roadside erosion and the repair technique(s) you will be using for each site should be attached to this form.
(NOTE: Attach a road erosion control maintenance log containing the following information: location, repairs, date)

The Borough of Keansburg will use the Public Works Department to monitor all their roads and streets for erosion problems during normal patrols. All identified road erosion problems will be reported to Director of Public Works (or designee). Identified areas of erosion will be discussed and repairs prioritized. Maintenance personnel will then be assigned to the areas of concern, and the areas identified to have road erosion problems will be repaired in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey. The status of the Road Erosion Control Maintenance Program will be included in the Annual Report and Recertification. The Borough performs its Road Erosion Control Maintenance Program by inspecting all roadways on a weekly basis.

If erosion is encountered, stabilization in the form of grading, seeding and straw is applied. The Borough will maintain records of street inspections conducted, as well as, a list of repairs and the dates they were completed.

SPPP Form 13 – Stormwater Facility Maintenance

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Please describe your annual catch basin cleaning program and schedule. Attach a map/diagram or additional pages as necessary.

The Borough will continue to conduct their existing inspection and cleaning activities of their catch basins which is conducted on pace to inspect all catch basins at a minimum of once every 5 years. If at the time of inspection, If at the time of inspection, no sediment, trash or debris is observed in the catch basin, then that catch basin will not be cleaned. All catch basins will be inspected yearly, even if they were found to be "clean" the previous year. At the time of cleaning, the catch basin will also be inspected for proper function. Maintenance will be scheduled for those catch basins that are in disrepair. Catch basin cleanign and maintenance will be documented.

The Borough shares services with the Eatontown Sewerage Authority (ETSA) and they conduct the catch basin cleaning with their jet vac. Spoils are disposed of by ETSA and records on the amount collected is provided to the Borough for their records and invoicing.

See Appendix 4 for additional information.

Please describe your stormwater facility maintenance program for cleaning and maintenance of all stormwater facilities operated by the municipality. Attach additional pages as necessary.

(NOTE: Attach a maintenance log containing information on any repairs/maintenance performed on stormwater facilities to ensure their proper function and operation.)

The Borough will continue to maintain its existing stormwater system maintenance program to ensure systems are functioning properly. Presently, the Borough operates nine (9) detention basins that are either owned and operated by the Borough or privately owned, as well as, several hundred inlets, storm drains, outfalls and the Wampum Pond and dam. These facilities are maintained on a regular basis throughout the year and on an as needed basis in high risk areas by the Borough Public Works Department.

See Appendix 4 for additional information. Records of inspection and routine maintenance and/or repairs are kept by the Borough's DPW Department.

SPPP Form 14 - Outfall Pipe Stream Scouring Remediation

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe your stormwater outfall pipe scouring detection, remediation and maintenance program to detect and control active localized stream and stream bank scouring. Attach additional pages as necessary.

(NOTE: Attach a prioritized list of sites observed to have outfall pipe stream and stream bank scouring, date of anticipated repair, method of repair and date of completion.)

The Borough will continue to conduct outfalls inspections a minimum of once every 5 years as required by the permit renewal requirements, along with its dry weather flow inspections. Outfall pipes showing signs of scouring will be reported to the Director of Public Works and the Borough Engineer.

These outfalls will be evaluated to determine if additional rehabiliation, repair or replacement is necessary. Based on the condition of the outfall, they will be prioritized for rehabilitation and/or repair in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey. Repairs and/or rehabilitation work that does not require NJDEP permits will be prioritized first.

All repairs will be followed with an annual inspection to ensure that the scouring has not resumed.

Records of all inspection, maintenance and/or rehabilitation/repairs conducted will be kept by the Borough's DPW Department.

SPPP Form 15 - De-icing Material Storage

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

De-icing Material Storage

Describe how you currently store your municipality's de-icing materials and describe your inspection schedule for the storage area. If your current storage practices do not meet the de-icing material storage SBR describe your construction schedule and your seasonal tarping interim measures. If you plan on sharing a storage structure, please include its location, as well as a complete list of all concerned public entities. If you store sand outdoors, describe how it meets the minimum standard.

The Borough utilizes bulk brine and rock salt for their de-icing activities. The Borough shares services with the Monmouth County Public Works Department for the use and storage of de-icing material during the winter season. The Borough maintains up to 100 tons of de-icing material at their DPW facility in a 2 bay covered garage. When not in use or during the off season left over de-icing material is pushed towards the back of the bay and bales of hay are placed in front to minimize runoff.

No sand is utilized or stored outdoors for de-icing purposes.

Routine maintenance and inspection of the de-icing material storage structure is conducted as needed throughout the year.

SPPP Form 16 – Standard Operating Procedures

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Keith Ferrugia, DPW Director

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

BMP	Date SOP went into effect	Describe your inspection schedule
Fueling Operations (including the required practices listed in Attachment D of the permit)	April 2005	The fueling area located in the DPW facility and at the Police Department will be inspected on a monthly basis. See Appendix 5 for copy of SOP
Vehicle Maintenance (including the required practices listed in Attachment D of the permit)	April 2005	Inspections will be held on a monthly basis to ensure that the standard operating procedure is being met. See Appendix 5 for copy of SOP.
Vehicle Washing	NOT APPLICABLE	*NO VEHICLE WASHING IS CONDUCTED ONSITE; THE BOROUGH SHARES SERVICES WITH MONMOUTH COUNTY RECLAMATION CENTER AND UTILIZES THEIR FACILITY FOR ANY VEHICLE WASHING NEEDED. RECORDS ARE MAINTAINED WHERE APPLICABLE.
Good Housekeeping Practices (including the required practices listed in Attachment D of the permit) **Attach inventory list required by Attachment D of the permit**.	April 2005	Indoor/outdoor storage areas, containers and surrounding areas around the DPW will be inspected on a monthly basis. See Appendix 5 for a copy of SOP. *SEE APPENDIX 5 FOR A COPY OF THE DPW FACILITIES INVENTORY LIST REQUIRED BY THE PERMIT RENEWAL.

SPPP Form 17 - Employee Training

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Janaea Morgan, Human Resources Officer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe your employee training program. For each required topic, list the employees that will receive training on that topic, and the date the training will be held. Attach additional pages as necessary.

The Borough's Employee Training Program will be broken down into four (4) phases. Phase 1 will include training to be undertaken by the Borough's Board Members and Governing Bodies. Phase 2 will include training requirements for Borough representatives responsible for overseeing the reviews of development and redevelopment applications. Phase 3 will include topics that will be covered on an annual basis with applicable employees. Phase 4 will include those topics that will be covered every two (2) years with applicable employees. Records of all training sessions scheduled for Phase 2 and Phase 3 will be maintained by the Borough's DPW Department. Training will be conducted either through webinars, video training and/or field training where necessary.

Attendance for Phase 3 and 4 of the employee training program will be recorded and maintained by the Borough's DPW Department for future reporting in the Borough's Annual Inspection and Recertification Report, where applicable.

Phase 1 – Municipal Board and Governing Body Members

Borough Board and Governing Body Members that review and approve applications for development and redevelopment projects complete one of the NJDEP's "Training Tools" under their Post Construction Stormwater Management website. Training can be found at https://www.nj.gov/dep/stormwater/training.htm and should be completed within the first month of a new term. Borough Board and Governing Body members will provide the Borough DPW Director with confirmation that the training has been conducted for input in the Borough's Annual Inspection and Recertification Report where applicable.

Phase 2 – Development/Redevelopment Application Reviewer Training

All Borough employees and/or representatives that review development and redevelopment projects for the Borough must complete an NJDEP approved training either offered by NJDEP or other training agency. The initial training must be completed by January 1, 2019 and then taken once every 5 years thereafter. Borough representatives will provide the Borough DPW Director with confirmation that the training has been conducted for input in the Borough's Annual Inspection and Recertification Report where applicable.

SPPP Form 17 - Employee Training (Continued)

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Janaea Morgan, Human Resources Officer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Describe your employee training program. For each required topic, list the employees that will receive training on that topic, and the date the training will be held. Attach additional pages as necessary.

Phase 3 – Annual Employee Training Program

Maintenance Yard Operations	Public Works employees & other users as appropriate
STW Facility Maintenance Program	Public Works employees
General SPPP	Public Works employees

Phase 4 – Bi-Annual Employee Training Program

Improper Waste Disposal Education	Code Enforcement Officer & Public Works Employees
Municipal Ordinances	Code Enforcement Officer & Public Works Employees
Yard Waste Collection Program	Public Works employees
Street Sweeping Program	Public Works employees
Outfall Pipe Stream Scouring Remediation	Public Works employees
Illicit Connection Elimination and Outfall Pipe Mapping	Public Works employees
Construction Activity/Post Construction Stormwater Management in New Development & Redevelopment	Public Works employees & Code Enforcement Officer

The illicit connection elimination training may include field training on procedures to properly conduct outfall inspections for illicit connections, follow-up investigation and procedures for elimination of the illicit connection for new employees. The maintenance yard operations training may include field training on the standard operating procedures for fueling, vehicle maintenance and good housekeeping practices.

As necessary, the Borough will evaluate alternative training tools to optimize the training program. Alternative training tools may include the use of informational CD's provided by EJIF or through formal training seminars offered by Rutgers Cooperative Extension. Links to training sources can be found at https://www.njstormwater.org/training.htm.

SPPP Form 18 – TMDL Info

Municipality Information

Municipality: Eatontown Borough County: Monmouth

NJPDES #: NJG 0148008 PI ID #: 190532

Team Member/Title: Edward Herrman, P.E., Borough Engineer

Effective Date of Permit Authorization (EDPA): 04/01/2004

Date of Completion: 03/01/2005 Date of most recent update: 4/30/2022

Using the Total Maximum Daily Load (TMDL) reports provided on the NJDEP website, list adopted TMDLs for the municipality, parameters addressed, and affected waters bodies impacted. Describe how you will use the TMDL information to prioritize stormwater facilities maintenance projects and to address specific sources of stormwater pollutants.

Applicable Stream TMDLs:

- *Total Maximum Daily Loads for Fecal Coliform to Address 31 Streams in the Atlantic Water Region*

  Fecal Coliform - 2003 : Parkers Creek Branch/Lafetras Brook, Shrewsbury River/Husky Brook*TMDL for*

- *Total Maximum Daily Loads for Fecal Coliform to Address 31 Streams in the Atlantic Water Region*

  Fecal Coliform - 2003 : Whale Pond Brook

Applicable Lake TMDLs:

- *Total Maximum Daily Loads for Pathogens to Address 18 Lakes in the Atlantic Coastal Water Region*

  Fecal Coliform – 2007

Applicable Shellfish TMDLs:

- *Five Total Maximum Daily Loads for Total Coliform to Address Shellfish-Impaired Waters in Watershed Management Area 12*

  Total coliform - 2006 : Shrewsbury Estuary-A, Shrewsbury Estuary-B, Shrewsbury Estuary-C

Based on a review of the above referenced TMDL reports, TMDL parameters identified within waterbodies impacted by the Broough include Fecal and Total Coliform, along with Pathogens. Implementation recommendations were reviewed and the Borough has already complied with implementation of their Phase II Stormwater Program, including adoption of the necessary pet waste, wildlife feeding and other community wide ordinances.

The Borough also continues to actively inspect and clean their stormwater infrastructure as outlined in the street sweeping, catch basin cleaning and outfall inspection requirements of their MS4 permit and they meet or exceed the minimum annual requirements where necessary.

The Borough's Local Public Education is being evaluted to determine what additional education material can be provided to area residents and businesses with respect to goose management, wildlife feeding impacts, mercury poisoning and other topics relavant to the TMDLs listed at future events.

APPENDIX 1

Municipal Stormwater Management Plan and Stormwater Control Ordinance

MUNICIPAL STORMWATER MANAGEMENT PLAN
MASTER PLAN ELEMENT

BOROUGH OF EATONTOWN
MONMOUTH COUNTY, NEW JERSEY

Adopted: January 14, 2008
First Draft dated: March 18, 2005
Amended: November 20, 2007

PREPARED FOR

BOROUGH OF EATONTOWN PLANNING BOARD

PREPARED BY:

EDWARD G. BROBERG, P.E., P.P.
EATONTOWN BOROUGH ENGINEER
Licensed Professional Engineer No. GE 18001
Licensed Professional Planner No. 1000

TM ASSOCIATES

11 Tindall Road
Middletown, New Jersey 07748
(732) 671-6400

MARCH 2005

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Members of the 2008 Planning Board

Gerald J. Tarantolo, Mayor

Paul Kirzow, Chairman

Jennifer Piazza, Vice Chairman

Rudolph Trask

Roger Greene

Carleton Sohl

Mark Woloshin

Amy Peak

Michael Napolitan

Mark Steinberg, Esq., Planning Board Attorney

Peggy Ciok, Land Use Administrator

RESOLUTION

WHEREAS, the New Jersey Municipal Land Use Act Law (N.J.S.A. 40:55D-89) requires that a municipality, by its Planning Board, provide a general reexamination of its Master Plan and development regulations every six years; and

WHEREAS, the Planning Board of the Borough of Eatontown has approved a general reexamination of the Eatontown Master Plan and development regulations prepared by Richard S. Cramer, Jr., P.P., A.I.C.P., of T&M Associates, dated September, 2007, in full satisfaction of its requirements, as set forth in the Municipal Land Use Law aforesaid on October 8, 2007, as memorialized by Resolution dated October 22, 2007; and

WHEREAS, the aforesaid reexamination of the Eatontown Master Plan has been sent to the Monmouth County Planning Board for review and comment; and

WHEREAS, the same is required to be amended to included the new Municipal Stormwater Management Plan as required by regulations amended November, 2007, to be included in the Master Plan; and

WHEREAS, Richard S. Cramer, Jr., has prepared a Municipal Stormwater Management Plan Master Plan Element Amended November 20, 2007, with amendments and corrections as required by the Monmouth County Planning Board; and

WHEREAS, the Planning Board of the Borough of Eatontown held public hearings upon notice as required by law, and the Board has reviewed the proposed Municipal Stormwater Management Plan Master Plan Element as above indicated, and has had the opportunity to discuss same with the Borough Planner and members of the public, if any.

NOW, THEREFORE, BE IT RESOLVED, by the Planning Board of the Borough of Eatontown, that it hereby adopts the Municipal Stormwater Management Plan Master Plan Element, dated November 20, 2007, prepared by Richard S. Cramer, Jr., P.P., A.I.C.P., of T&M Associates, in full satisfaction of its requirements, as set forth in the Municipal Land Use Law as aforesaid.

BE IT FURTHER RESOLVED, by the Planning Board of the Borough of Eatontown, that a copy of this Resolution and the Municipal Stormwater Management Plan Master Element, dated November 20, 2007, be forwarded to the Monmouth County Planning Board and the Municipal Clerks of each adjoining municipality to the Borough of Eatontown.

DATED: January 14, 2008

MOVED BY: Mayor Tarantolo

SECONDED BY: Mr. Sohl

ROLL CALL VOTE

AYES: Messrs. Kirzow, Trask, Sohl, Woloshin, Napolitan, Miss Piazza and Mayor Tarantolo

NAYS: None

ABSENT: Mrs. Peak and Mr. Greene

ABSTAIN: None

MOVED BY: Mayor Tarantolo

SECONDED BY: Miss Piazza

ROLL CALL VOTE

AYES: Messrs. Trask, Sohl, Woloshin, Napolitan, Miss Piazza and Mayor Tarantolo

NAYS: None

ABSENT: Mr. Kirzow

ABSTAIN: None

NOT ELIGIBLE: Mrs. Peak and Mr. Greene

DATED: January 28, 2008

Paul J. Kirzow

PAUL J. KIRZOW, Chairman
Eatontown Planning Board

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1.0 INTRODUCTION

As a result of the publication of the United States Environmental Protection Agency (USEPA) Phase II rules in December 1999, the New Jersey Department of Environmental Protection (NJDEP) promulgated new stormwater regulations to address non-point source pollution entering surface and ground waters of the State of New Jersey. Under these regulations, municipalities were issued a New Jersey Pollutant Discharge Elimination System (NJPDES) Permit that established various statewide basic requirements. One of these requirements is the development and adoption of an amendment to their overall Master Plan to address stormwater pollution associated with major development.

As required by the Municipal Stormwater Regulations (N.J.A.C. 7:14A-25), the Borough of Eatontown has developed this Municipal Stormwater Management Plan (MSWMP) to outline their approach to address the impacts resulting from stormwater related issues associated with future development and land use changes. The MSWMP addresses groundwater recharge, stormwater quantity, and stormwater quality impacts through the incorporation of stormwater design and performance standards for new development and redevelopment projects that disturb one or more acres of land. The standards are intended to minimize negative or adverse impacts of stormwater runoff such as decreased water quality, increased water quantity, and reduction of groundwater recharge that provides base flow to receiving bodies of water. Also, the MSWMP provides long term operation and maintenance measures for existing and proposed stormwater management facilities.

Ordinance changes are recommended to expedite the implementation of stormwater management strategies. A build-out analysis is not included since the Borough has less than one square mile of developable or vacant land. It should be noted that Fort Monmouth was not included in these calculations, as it is governed under its own New Jersey Public Complex Stormwater General Permit. The MSWMP also includes a mitigation plan to permit the Borough to grant variances or exemptions from proposed design and performance standards set forth in this document.

1.1 GOALS & OBJECTIVES

The goals of this Plan are to:

- ***Reduce flood damage, including damage to life and property;***
- ***Minimize, to the extent practicable, any increase in stormwater runoff from a new development;***
- ***Reduce soil erosion from development, redevelopment, or construction projects;***
- ***Encourage the adequacy of existing and proposed culverts, bridges, and other in-stream structures;***
- ***Maintain groundwater recharge and base flow of streams during periods of drought;***
- ***Prevent, to the greatest extent feasible, an increase in non-point source pollution;***
- ***Maintain the integrity of stream channels for their biological function, as well as for drainage;***
- ***Minimize pollutants and the amount of total suspended solids in stormwater runoff from new and existing development to restore, enhance, and maintain the chemical, physical, and biological integrity of the waters of the state, to protect public health, to safeguard fish and aquatic life and scenic and ecological values, and to enhance the domestic, municipal, recreational, commercial, industrial, and other uses of water;***
- ***Protect public safety through the proper design and operation of stormwater basin and Best Management Practices;***

In addition to the State mandated goals noted above, the Borough also recommends the following goals:

- ***Provide conservation areas as well as passive and active recreation facilities;***
- ***Assure that present buffer requirements are both adequate and reasonable and that they are consistently administered;***
- ***Adequately safeguard freshwater wetlands and transition areas to ensure that they***

are not developed;

- ***Encourage the reduction of sedimentation to the Shrewsbury River and its associated shellfish beds.***

To achieve these goals, the MSWMP outlines specific stormwater design and performance standards for new development and redevelopment projects and proposes stormwater management controls for addressing impacts from existing developments. Preventive and corrective maintenance strategies are also included in the MSWMP to ensure the long-term effectiveness of the stormwater management facilities. Finally the MSWMP outlines safety standards for stormwater infrastructure to be implemented to protect public safety.

2.0 DEFINITIONS

- ***AMNET Impairment Level***
  - *Non-impaired*: benthic community comparable to other undisturbed streams within the region; community characterized by a maximum taxa richness, balanced taxa groups, and good representation of intolerant individuals.
  - *Moderately Impaired*: macroinvertebrate richness reduced, in particular EPT taxa; reduced community balance and numbers of intolerant taxa.
  - *Severely Impaired*: benthic community dramatically different from those in less impaired situations; macroinvertebrates dominated by a few taxa, but with many individuals; only tolerant individuals present.
- ***Best Management Practices Manual*** – NJDEP document providing design, performance and maintenance criteria related to non-structural and structural stormwater management strategies, legal requirements, and the impacts of stormwater runoff, as described in N.J.A.C. 7:8.
- ***Evapo-transpiration*** - The combination of the processes of removing water from wet surfaces via evaporation and from leaves of plants via transpiration and returning it to the atmosphere.
- ***Groundwater Flow*** - Movement of water through the subsurface.
- ***Groundwater Recharge*** - The amount of water from precipitation that infiltrates into the ground and is not evapo-transpired.
- ***Hydrologic Units (HUC-14s)*** - USGS designated subwatershed with a minimum basin area of 3,000 acres. These subwatersheds are designated with a 14 digit unit code.
- ***Impervious Cover*** - A surface that has been covered by a layer of material that is highly resistant to infiltration by water.
- ***Infiltration*** - Penetration of water through the ground surface.
- ***Municipal Stormwater Management Regulations*** **(N.J.A.C. 7:8 and N.J.A.C. 7:14A-25)** - Regulations authorizing the NJPDES Tier A Municipal Stormwater Master General Permit, which outlines the various statewide basic requirements, the municipal stormwater management plan and stormwater control ordinance.

- ***MSWMP*** – Municipal Stormwater Management Plan.
- ***NJPDES*** - The New Jersey Pollutant Discharge Elimination System Tier A Municipal Stormwater Master General Permit is the permit that governs municipal stormwater discharges and lays forth the requirements for compliance with the State's stormwater regulations.
- ***Non-point Source Pollution*** - Pollution for which the source is not a discreet location or point.
- ***Non-Structural Stormwater Management Strategies*** - A strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances, which do not require structural engineering or designs.
- ***Point Source Pollution*** - Pollution for which the origin is a known location, i.e. a pipe outfall.
- ***Recharge*** - Water that reaches saturated zones.
- ***Regional Plans*** - Stormwater management plans focusing on managing stormwater in a given watershed, or stream, rather than management of stormwater based on municipal boundaries.
- ***Residential Site Improvement Standards (RSIS)*** - New Jersey Administrative Code Title 5 Chapter 21. These rules govern site improvement standards in residential areas.
- ***Runoff*** - Water that travels over the ground surface to a channel.
- ***Stormwater Management Control Ordinance*** - The enabling ordinance to this Master Plan element which is to be adopted within 12 months of the adoption date of this MSWMP.
- ***Structural Stormwater Management Strategies*** - A strategy, practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal non-stormwater discharges into stormwater conveyances, which requires structural engineering or designs.

3.0 STORMWATER DISCUSSION

3.1 HYDROLOGIC CYCLE

The hydrologic cycle, or water cycle (Figure 1), is the continuous circulation of water between the ocean, atmosphere, and the land. The driving force of this natural cycle is the sun. Water, stored in oceans, depressions, streams, rivers, waterbodies, vegetation and even land surface, constantly evaporates due to solar energy. This water vapor then condenses in the atmosphere to form clouds and fog. After water condenses, it precipitates, usually in the form of rain or snow, onto land surfaces and waterbodies. Precipitation falling on land surfaces is often intercepted by vegetation. Plants and trees transpire water vapor back into the atmosphere, as well as aid in the infiltration of water into the soil. The vaporization of water through transpiration and evaporation is called evapo-transpiration. Infiltrated water percolates through the soil as groundwater, while water that flows overland is called surface water. Water flows across or below the surface to reach major water bodies and aquifers and eventually flows to the Earth's seas and oceans. This constant process of evapo-transpiration, condensation, precipitation, and infiltration comprises the hydrologic cycle.

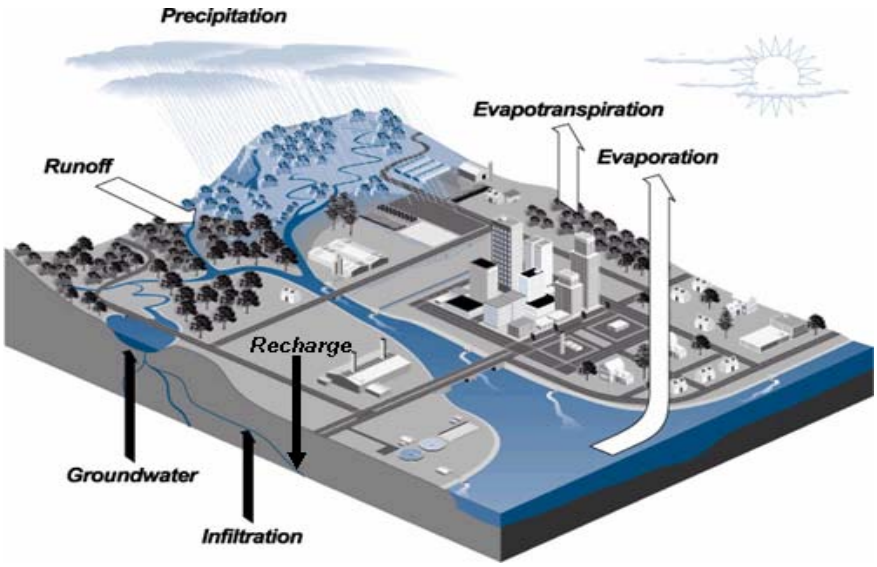
3.2 IMPACTS OF DEVELOPMENT AND STORMWATER

As towns and cities develop from rural agricultural communities, the landscape is altered in dramatic ways. Both residential and non-residential development on former agricultural fields and pastures has a great impact on the hydrologic cycle for the specific site. Localized impacts to the hydrologic cycle will ultimately impact the hydrologic cycle of the entire watershed encompassing the development site.

Prior to any land development, native vegetation often intercepts precipitation directly or absorbs infiltrated runoff into their roots. Development often replaces native vegetation with lawns or impervious cover, such as pavement or structures, thereby reducing the amount of evapo-transpiration and infiltration. Regrading and clearing of lots disturbs the natural topography of

rises and depressions that can naturally capture rainwater and allow for infiltration and evaporation. Construction activities often compact soil, thereby decreasing its permeability or ability to infiltrate stormwater. Development activities also generally increase the volume of stormwater runoff from a given site.

Figure 1: The Hydrologic Cycle



Source: Kern River Connections
http://www.creativille.org/kernriver/watershed.htm

Connected impervious surfaces and storm sewers (such as roof gutters emptying into a paved parking lot that drains into a storm sewer) allow the runoff to be transported downstream more rapidly than natural areas. This shortens travel time and increases the rainfall- runoff response of the drainage area, causing downstream waterways to peak higher and quicker than natural areas, a situation that can cause or exacerbate downstream flooding, and sedimentation in stream channels. Furthermore, connected impervious surfaces do not allow pollutants to be filtered, or for infiltration and ground water recharge to occur prior to reaching the receiving waters. Increased volume combined with reduced base flows results in a greater fluctuation between normal and storm flows causing greater channel erosion. Additionally, reduced base flows, increased fluctuation, and soil erosion can affect the downstream hydrology, impacting ecological integrity.

Water quantity impacts combined with land development often adversely affect stormwater quality. Impervious surfaces collect pollutants from the atmosphere, animal wastes, fertilizers and pesticides, as well as pollutants from motor vehicles. Pollutants such as hydrocarbons, metals, suspended solids, pathogens, and organic and nitrogen containing compounds, collect and concentrate on impervious surfaces. During a storm event, these pollutants are washed directly into the storm sewers (Figure 2). In addition to chemical and biological pollution, thermal pollution can occur from water collected or stored on impervious surfaces or in stormwater impoundments, which has been heated by the sun. Thermal pollution can affect aquatic habitats, adversely impacting cold water fish. Removal of shade trees and stabilizing vegetation from stream banks also contributes to thermal pollution.

Figure 2: Connected Impervious Surfaces

Rainwater is intercepted by roofing and collected into gutters. The water then discharges the downspout onto a paved driveway and flows to the gutter and storm drain inlets. Alternatively, the collected water is piped underground directly to the storm sewer.
Photograph source: Titan Gutters

Proper stormwater management will help to mitigate the negative impact of land development and its effect on stormwater. This MSWMP outlines the Borough's plan to improve stormwater quality, decrease stormwater quantity, and increase groundwater recharge. By managing stormwater, the Borough will improve the quality of aquatic ecosystems and restore some of the natural balance to the environment.

4.0 BACKGROUND

Eatontown Borough is located in the central portion of eastern Monmouth County, New Jersey. It is approximately 5.88 square miles or 3,765 acres in size. The Borough is bordered to the north by Shrewsbury Borough along Parker's Creek. Also bordering the Borough to the north and west is Tinton Falls Borough. Eatontown shares its southern borders of Cranberry Brook and Whale Pond Brook with Ocean Township. To the east of the Borough lies the Boroughs of West Long Branch and Oceanport. Eatontown is primarily considered a mix of residential and commercial development, with industrial uses contained primarily in the southeast quadrant. Figure 3 shows the Borough's boundary delineated in a United States Geological Survey (USGS) quadrangle map.

This MSWMP is a new element to the Borough's comprehensive Master Plan. It is intended to build on the research, background information, goals, objectives and recommendations included in the Planning Board's *Master Drainage Plan (*dated February 1972); the *Eatontown Master Plan (dated 1986);* the *Master Plan Amendments* (dated 2000, 2002 and 2003); and the *Master Plan Re-Examination Reports* (dated November 2001 and January 2004).

4.1 DEMOGRAPHICS AND LAND USE

Eatontown experienced a population explosion during the Post World War II/Baby Boomer era. The Borough's population increased over seven hundred percent between 1940 and 1970, raising from 1,758 to 14,619 people in that thirty-year period. Eatontown grew nearly three times as fast as Monmouth County and more than seven times faster than the State over the same thirty years. Eatontown's population then decreased significantly between 1970 and 1980. Since 1980, Eatontown's population growth has slowed considerably indicating the population may have stabilized to a steady growth rate. In fact, the population as of the 2000 census still has not reached the high of the 1970's. See Table 1: Historical Population Growth 1930 - 2000 for the State, County and Borough population trends.

Figure 3: Topographic Map
Borough of Eatontown
Monmouth County, New Jersey

Source: USGS Long Branch (1981)
NJ Quadrangle Map

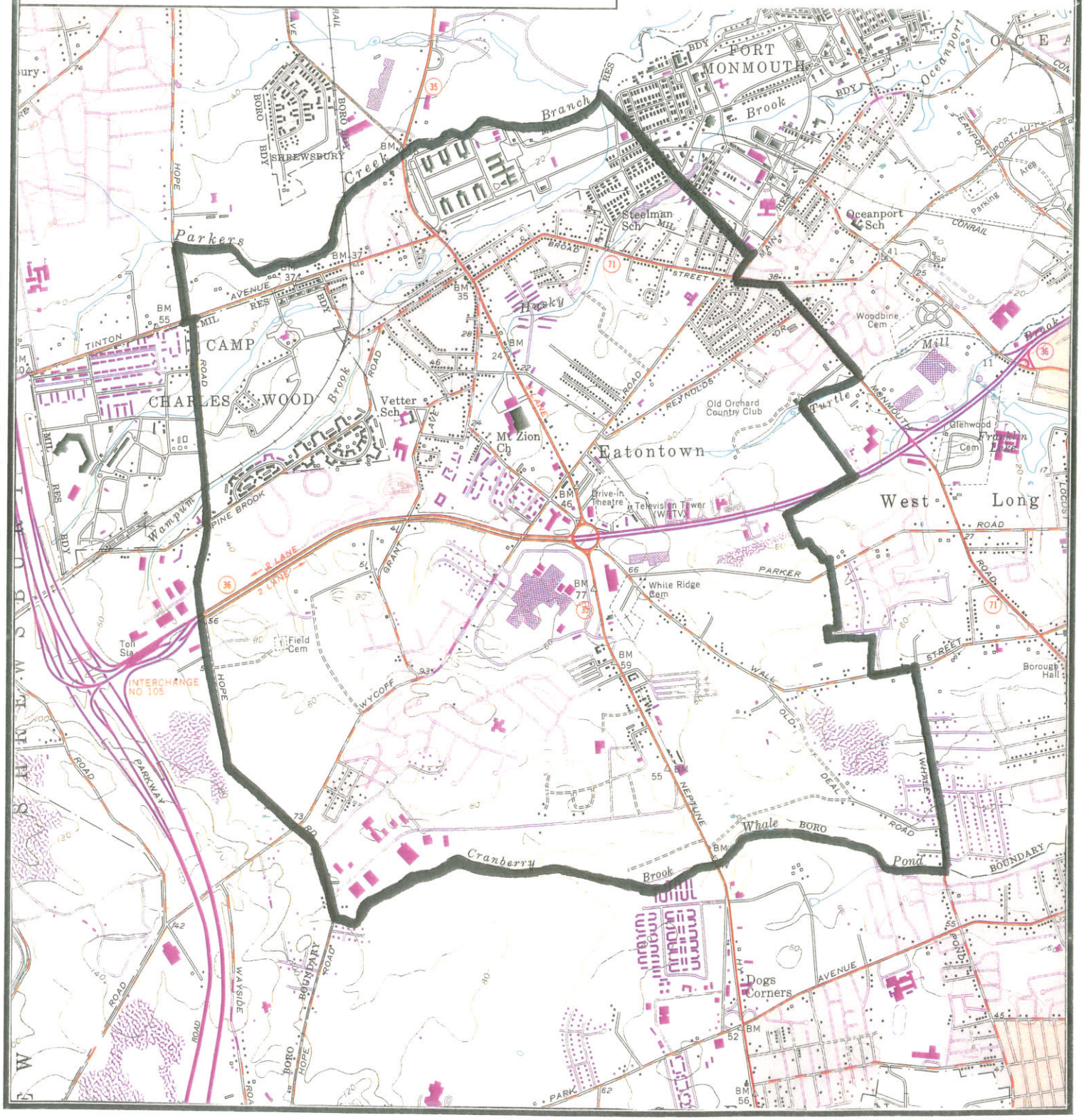


Table 1: Historical Population Growth 1930 – 2000

Year	*Eatontown Borough*		*Monmouth County*		*New Jersey*	
	Total Population	*Percent Change*	*Total Population*	*Percent change*	*Total Population*	*Percent Change*
1930	1,938	--	147,209	4.0%	4,041,334	2.8%
1940	1,758	- 9.3	161,238	0.9%	4,160,165	0.3%
1950	3,044	73.2	225,327	4.0%	4,835,329	1.6%
1960	10,334	239.4	334,401	4.8%	6,066,782	2.6%
1970	14,619	41.5	461,849	3.8%	7,171,112	1.8%
1980	12,703	- 13.2	503,173	0.9%	7,364,823	0.3%
1990	13,800	8.6	553,124	1.0%	7,730,118	0.5%
2000	14,008	1.5	615,305	1.1%	8,414,350	0.9%
2004 Estimate	14,227	1.6				
2010 Estimate	14,298	0.05				

Sources: Eatontown Borough Master Plan Background Studies, dated August 2001, Tables 2-1 and Table 2-2; and http://www.wnjpin.net/OneStopCareerCenter/LaborMarketInformation/lmi01/poptrd6.htm

Development in Eatontown has historically been guided by inclusionary housing and land use policies. This has led to a variety of housing types, of which over 80% of the housing stock has been constructed since the 1950's. Most of the remaining vacant acreage within the Borough is subject to constraints making it unsuitable for residential development. Per the Borough's November 2001 *Borough of Eatontown Master Plan Reexamination Report*, the Borough is largely developed and most of the recent development activity has been residential or commercial infill or the intensification or modification of existing developed sites.

In general, the Borough is composed of intensely developed residential areas north of Route 36, while lower residential densities are located predominantly in the southern portion below Route 36. Commercial and retail land uses are concentrated at the intersections of Route 36 and Route 35. Other Borough land uses include Fort Monmouth and the Eatontown Business Park.

Fort Monmouth is a well maintained research and office campus which is split into two distinct areas. The Main Post is approximately 637 acres in size and falls within the municipal boundaries of Eatontown and Oceanport. The Charles Wood area is approximately 489 acres in size and is located partially in Eatontown and partially in Tinton Falls. Of the over 1,125 acres of the total complex, 453 acres, or approximately 40 percent, falls within the Eatontown municipal boundaries.

The Fort Monmouth Complex has over 300 acres of buildable area and currently provides high tech research and development facilities with state of the art fiber optic communication systems. Other uses of the Fort include climate controlled warehouse facilities, an educational campus with dorm rooms, indoor and outdoor recreational facilities, golf course, dining facilities, an auditorium, Patterson Army Health Clinic and the Veterans' Administration Clinic.

Table 2: 2000 Housing Units

HOUSING OCCUPANCY	Housing Units	Percent
Total housing units	6,341	100.0
Occupied housing units	5,780	91.2
Vacant housing units	561	8.8
For seasonal, recreational, or occasional use	30	0.5
Homeowner vacancy rate (percent)		1.7
Rental vacancy rate (percent)		4.9
HOUSING TENURE	**Housing Units**	**Percent**
Occupied housing units	5,780	100.0
Owner-occupied housing units	2,841	49.2
Renter-occupied housing units	2,939	50.8
Average household size	2.35	
Average household size of owner-occupied unit	2.64	
Average household size of renter-occupied unit	2.07	

Source: U. S. Census 2000 Summary File 1 (SF 1)

4.2 WATERWAYS

Eatontown has a number of water bodies, as shown in Figure 4. According to the *Borough of Eatontown Natural Resource Inventory* prepared in April 1979 and the *Master Drainage Plan* (1972), the following streams and waterbodies are located within the Borough.

- Husky Brook/Oceanport Creek — drains over 1.5 square miles of the Borough. This area is developed and noted to be prone to severe flooding in times of heavy rainfall.
- Wampum Brook—drains 2.7 square miles of the northern section of the Borough. This area experienced minimal flooding in 1979, though flooding was expected to become an issue with the increase in development to the west of this brook.
- Wampum Lake — originally a millpond, this small lake is fed by Wampum Brook. As with the Brook, flooding issues were expected to increase with upstream development. In 1979, it was intended that this lake be improved to increase its capacity for flood storage.
- Turtle Mill Brook/Branchport Creek—drains approximately 1 square mile in the eastern portion of the Borough. It drains the Old Orchard Golf Course and some of Rt. 35.
- Parker's Creek/Shrewsbury—the northern border of the Borough, it joins with Wampum Lake and drains approximately 1.56 square miles, though only 150 acres of the drainage lie within the Borough's boundaries.
- Cranberry Brook/Whale Pond Brook—forms the southern boundary along with Whale Pond Brook. Cranberry Brook drains 3.4 square miles (660 acres within the Borough).

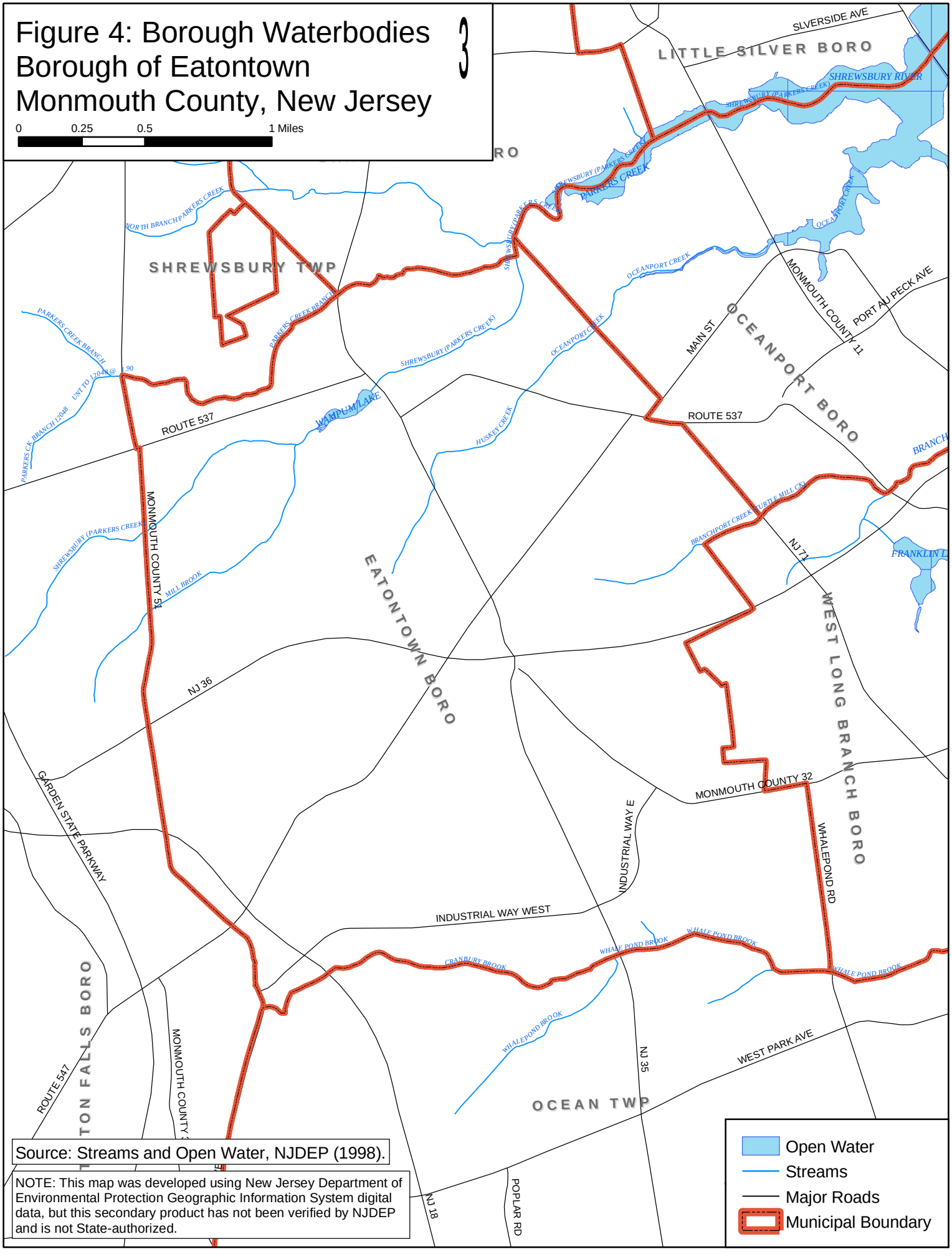


Figure 4: Borough Waterbodies
Borough of Eatontown
Monmouth County, New Jersey
3
0
0.25
0.5
1 Miles
LITTLE SILVER BORO
SLVERSIDE AVE
SHREWSBURY RIVER
SHREWSBURY (PARKERS CREEK)
PARKERS CREEK
NORTH BRANCH PARKERS CREEK
SHREWSBURY TWP
PARKERS CREEK BRANCH
OCEANPORT CREEK
MONMOUTH COUNTY 11
PORT AU PECK AVE
MAIN ST
OCEANPORT BORO
ROUTE 537
WAMPUM LAKE
HUSKEY CREEK
BRANCHPORT CREEK
TURTLE MILL CK
NJ 71
FRANKLIN L
MONMOUTH COUNTY 54
SHREWSBURY (PARKERS CREEK)
MILL BROOK
EATONTOWN BORO
WEST LONG BRANCH BORO
NJ 36
GARDEN STATE PARKWAY
MONMOUTH COUNTY 32
INDUSTRIAL WAY E
WHALEPOND RD
INDUSTRIAL WAY WEST
CRANBURY BROOK
WHALE POND BROOK
WHALEPOND BROOK
ROUTE 547
MONMOUTH COUNTY 4
NJ 35
WEST PARK AVE
OCEAN TWP
NJ 18
POPLAR RD
Source: Streams and Open Water, NJDEP (1998).
NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.
Open Water
Streams
Major Roads
Municipal Boundary

4.4 WATER QUALITY

The Ambient Biomonitoring Network (AMNET) was established by the NJDEP to monitor and document the health of New Jersey's waterways. AMNET currently has 820 sites in five drainage basins that it monitors for benthic macro-invertebrates on a five-year cycle. Waterways are scored based on the data to generate the New Jersey Impairment Score (NJIS) and then categorized as severely impaired, moderately impaired, and non-impaired. The NJIS is based on biometrics and benthic macro-invertebrate health. (http://www.state.nj.us/dep/wmm/bfbm/).

In addition to the biological health, chemical data are gathered by the NJDEP, the Monmouth County Health Department, and other organizations, and used to determine the health of waterways. The impaired waterways are summarized on the New Jersey 2004 Integrated List of Water Bodies. This list is then broken down into five sublists based on priority. The streams on Sublist 5 are classified as being the most severely impaired or threatened, whereas the streams on Sublist 1 are the least threatened or impaired. Eatontown is located within Watershed Management Area 12, Monmouth Watersheds. A summary of the Borough streams listed on the Integrated List is present in Table 3 below.

Table 3: 2004 Eatontown Borough Integrated List Water Bodies

Sublist	Station Name/Waterbody	Site ID	Impairment Parameters	Data Source
3	Husky Brook at South St In Eatontown	33	pH, Total Suspended Solids	Monmouth Co HD
1	Husky Brook at South St in Eatontown	33	Phosphorus, Nitrate	Monmouth Co HD
4	Husky Brook at South St in Eatontown	33	Fecal Coliform	Monmouth Co HD
3	Husky Brook at South St in Eatontown	MB-33	Benthic Macroinvertebrates	Monmouth Co HD
1	Whale Pond Brook at Route 35 in Eatontown	01407617, 31	Phosphorus, Temperature, Dissolved Oxygen, Nitrate, Dissolved Solids, Total Suspended Solids, Unionized Ammonia	NJDEP/USGS Data, Monmouth Co HD
4	Whale Pond Brook at Route 35 in Eatontown	01407617, 31	Fecal Coliform	NJDEP/USGS Data, Monmouth Co HD
5	Whale Pond Brook at Route 35 in Eatontown	01407617, 31	pH	NJDEP/USGS Data, Monmouth Co HD

Sources: <http://www.state.nj.us/dep/wmm/bfbm/> Sub-list 1-5, New Jersey's 2004 Integrated List of Water Bodies, dated June 22, 2004

This water quality data is used by the NJDEP to develop Total Maximum Daily Loads (TMDL). A TMDL is the quantity of a pollutant that can enter a waterbody without exceeding water quality standards or interfering with the ability to use the waterbody for its designated usage. Point and non-point source pollution, surface water withdrawals and natural background levels are included in the determination of a TMDL, as required by Section 303(d) of the Clean Water Act. Point source pollution includes, but is not limited to NJPDES permitted discharges, while non-point source pollution can include stormwater runoff from agricultural lands or impervious surfaces. TMDLs determine the allowable load from each source, with a factor of safety for the pollutant entering the water body. TMDLs can be used to limit further deterioration of a water body, or to improve the current water quality.

Currently the NJDEP has proposed two fecal coliform TMDLs for streams in Eatontown. The Husky Brook at South Street has a proposed TMDL for fecal coliform extending for 1.7 river miles. Whale Pond Brook at Rt. 35 is also listed as having a TMDL for fecal coliform. This stream is listed as impaired for 3.7 river miles. Since Whale Pond Brook shares its watershed with Ocean Township, the impairments are not necessarily only from Eatontown. It is important to note, however, that these are not stormwater specific TMDLs, and as such are not covered under this MSWMP.

In addition to State monitoring, the Monmouth County Planning Board has compiled a list of issues within the North Coast and Mid Coast Subwatersheds. In their 2001 report, the County Planning Board noted that the region suffered from lack of maintenance along stream corridors, lack of groundwater recharge, high fecal coliform and nutrient loadings, lack of wetlands protection, overgrowth of invasive and non-native plant species, and lack of stormwater volume control to shellfish beds. The North Coast and Mid Coast Subwatersheds are also both listed as having issues with sedimentation, water quality, and erosion. In addition, the North Coast has issues relating to stormwater infrastructure, and its natural resource management list, while the Mid Coast has issues with water quantity.

The Monmouth County Health Department also has ambient monitoring sites for the Whale Pond Brook in Eatontown, and Branchport Creek in Long Branch. These sites are monitored on average of four times per year for fecal coliform, pH, phosphorous, ammonia, TSS, and turbidity. Branchport Creek routinely has ammonia and phosphorous readings well above standard, as well as frequent above standard seasonal high levels for fecal coliform. Whale Pond Brook, also has above standard ammonia levels, and frequent seasonal above standard high levels for fecal coliform. Whale Pond Brook also had pH levels ranging from 6.1 in 2001, and 4.2 in October of the same year. Branchport Creek, however, has a fairly steady neutral pH over the same time period.

4.5 WATER QUANTITY

Stormwater also often causes water quantity issues. There are several flood prone areas in Eatontown Borough including, but not limited to, the following:

1. Husky Brook at Clinton Avenue culvert crossing – Caused by midsize culverts at Route 35 and Clinton Avenue.
2. Eaton Crest Drive – A privately owned old and undersized drainage system carrying the discharge of stormwater from Route 18 and a portion of Route 36.
3. Wyckoff Road adjacent to Meadowbrook Park – This is caused by runoff from adjacent residential development to a branch of Husky Brook flowing undetained to a County owned drainage system.
4. Lewis Street adjacent to Borough Public Works Property – This flooding is currently being addressed by the replacement of a substandard culvert by Monmouth County. The construction is anticipated to begin in the Spring of 2008.
5. Old Orchard Golf Course – Several areas of this public/private golf course flood during heavy storms due to insufficient ditch capacity.
6. Cranberry Brook – This area bordering the Borough's Southeast quadrant, contains an extremely wide floodplain, heavily wooded, with a flat grade. During periods of heavy storms, the ill-defined stream overflows and becomes a natural wetland. The stream is functioning as nature intended.

7. Branch of Husky Brook at South Street Culvert Crossing – This flooding is exacerbated by the downstream undersized culverts at Wyckoff Road and Route 35.

It is important to note that many of the flooding areas within the Borough are associated with County and State roads that do not have to comply with the MSWMP.

4.6 GROUNDWATER RECHARGE

Impervious surface is increased as vacant sites are developed. Impervious surface is that portion of a site covered with structures and paving, which prevents the underlying soil from absorbing rainwater. Instead of entering the soil, rainwater from rooftops and pavement flow onto the adjacent ground, where it is partially absorbed into the ground (depending upon hydrologic soil classifications) or into drainage facilities and streams. The greater the amount of impervious surface on a site, the greater volume of stormwater runoff that drains away from a site. Greater volumes of stormwater can result in high water elevations in some locations along streams and can exacerbate streambed erosion, with the added impact of downstream siltation. These dynamics alter the floodplain and have negative impacts on the stream and river ecosystems.

In addition to streambeds, the volume of runoff allowed to infiltrate the ground affects natural aquifers. According to the *Natural Resources Inventory*, the Hornerstown and Vincentown Formations underlie Eatontown. There are six aquifers of varying sizes underlying the Borough. These aquifers include Raritan and Magothy Formations, Englishtown Formation, Wenoah-Mount Laurel Sand Formation, Red Bank Sand, Vincentown Formation, and the Kirkwood Formation. Though these aquifers are not currently exposed within the Borough, groundwater recharge may reach these aquifers at depth further downstream. A map showing the groundwater recharge areas within the Borough is located in Figure 5.

Husky Brook has also been observed to have very low base flow during seasons of drought. The supplemental flow to streams in the groundwater recharge areas is the single most important factor maintaining the stream flow during periods of annual low flow (hot, dry summer and early fall months) and during periods of drought. During these times, base flow of the stream is

maintained via discharging groundwater. The maintenance of quantity of flow, the water quality and the survival of the aquatic and wetlands communities are directly dependent upon this groundwater discharge.

In addition to the protection of surface water, maintaining groundwater quality and quantity is important due in part to the presence of private wells for drinking water. Furthermore, the Borough operates two wells for the irrigation of fields located at 80 Acre Park. It should be noted that there are no public drinking water wells within the Borough, and therefore no wellhead protection areas. See Figure 6 - Wellhead Protection Areas.

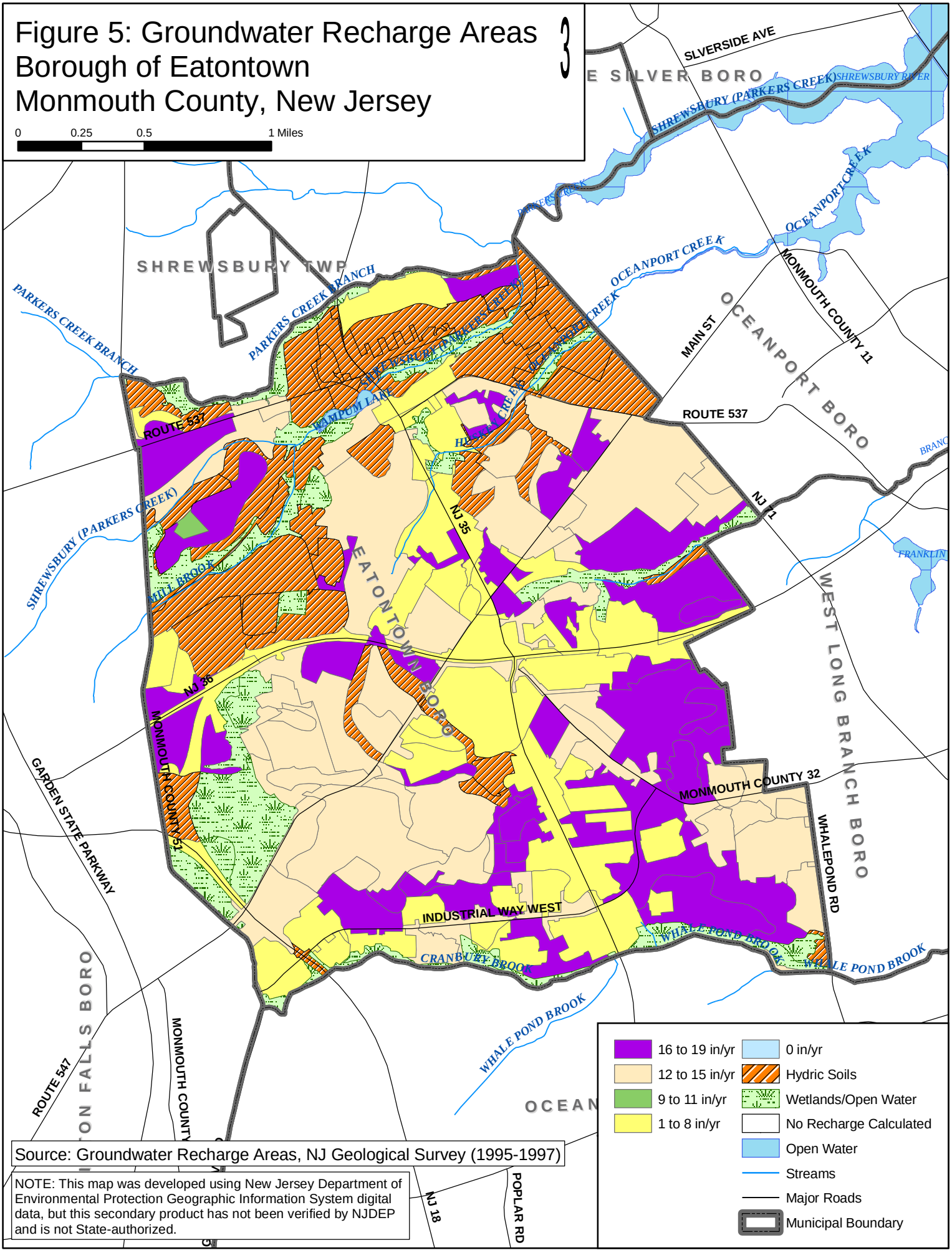


Figure 5: Groundwater Recharge Areas
Borough of Eatontown
Monmouth County, New Jersey
3
0
0.25
0.5
1 Miles
SLVERSIDE AVE
E SILVER BORO
SHREWSBURY (PARKERS CREEK)
SHREWSBURY RIVER
OCEANPORT CREEK
SHREWSBURY TWP
PARKERS CREEK BRANCH
PARKERS CREEK BRANCH
SHREWSBURY (PARKERS CREEK)
MAIN ST
OCEANPORT BORO
MONMOUTH COUNTY 11
ROUTE 537
ROUTE 537
NJ 35
NJ 71
EATONTOWN BORO
WEST LONG BRANCH BORO
MILL BROOK
FRANKLIN
NJ 36
MONMOUTH COUNTY 51
GARDEN STATE PARKWAY
MONMOUTH COUNTY 32
WHALEPOND RD
INDUSTRIAL WAY WEST
CRANBURY BROOK
WHALE POND BROOK
WHALE POND BROOK
ROUTE 547
MONMOUTH COUNTY
NJ 18
POPLAR RD
16 to 19 in/yr
12 to 15 in/yr
9 to 11 in/yr
1 to 8 in/yr
0 in/yr
Hydric Soils
Wetlands/Open Water
No Recharge Calculated
Open Water
Streams
Major Roads
Municipal Boundary
Source: Groundwater Recharge Areas, NJ Geological Survey (1995-1997)
NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

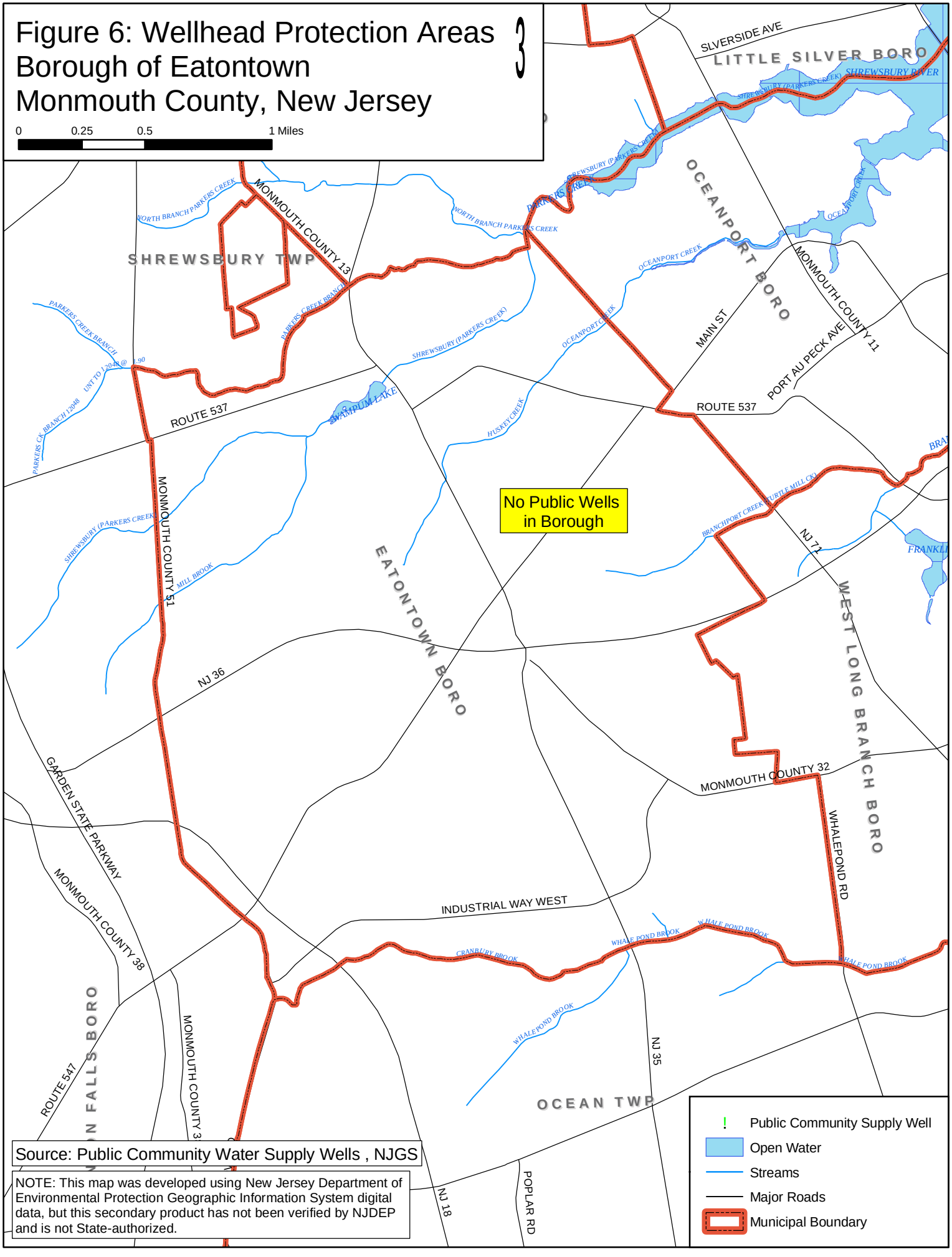


Figure 6: Wellhead Protection Areas
Borough of Eatontown
Monmouth County, New Jersey
3
0
0.25
0.5
1 Miles
SLVERSIDE AVE
LITTLE SILVER BORO
SHREWSBURY RIVER
SHREWSBURY (PARKERS CREEK)
OCEANPORT BORO
OCEANPORT CREEK
MONMOUTH COUNTY 11
MAIN ST
PORT AU PECK AVE
ROUTE 537
SHREWSBURY TWP
NORTH BRANCH PARKERS CREEK
MONMOUTH COUNTY 13
PARKERS CREEK BRANCH
PARKERS CK BRANCH 12048
UNT TO 12048 @ I-90
SHREWSBURY (PARKERS CREEK)
SWIMMUM LAKE
HUSKEY CREEK
MONMOUTH COUNTY 51
No Public Wells in Borough
EATONTOWN BORO
MILL BROOK
BRANCHPORT CREEK
TURTLE MILL CK
NJ 71
WEST LONG BRANCH BORO
NJ 36
GARDEN STATE PARKWAY
MONMOUTH COUNTY 32
WHALEPOND RD
INDUSTRIAL WAY WEST
MONMOUTH COUNTY 38
CRANBURY BROOK
WHALE POND BROOK
ROUTE 547
MONMOUTH COUNTY 3
NJ 35
OCEAN TWP
NJ 18
POPLAR RD
Source: Public Community Water Supply Wells , NJGS
NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.
Public Community Supply Well
Open Water
Streams
Major Roads
Municipal Boundary

5.0 DESIGN AND PERFORMANCE STANDARDS

In 2006, the Borough adopted applicable design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to reduce the negative impact of stormwater runoff on water quality and quantity, and loss of groundwater recharge. Section 6.0 of this MSWMP, entitled Stormwater Management Strategies, indicates actions appropriate for various types of development in Eatontown. Design and performance standards were added to the existing standards to contain the necessary language to maintain stormwater management measures consistent with applicable stormwater management rules at N.J.A.C. 7:8-5.8 - Maintenance Requirements. This included language for safety standards consistent with N.J.A.C. 7:8-6 - Safety Standards for Stormwater Management Basins. The ordinances establishing these new design and performance standards were submitted to the county for review and approval within 12 months of the adoption of this MSWMP.

A number of structural and non-structural strategies require water to be retained for long periods of time. These requirements may increase the promulgation of mosquito breeding habitats. New development and redevelopment activities should be coordinated with the Monmouth County Mosquito Extermination Commission so that the facilities can be properly maintained.

Proper construction and maintenance are critical to the successful performance of a stormwater management system. Inspectors from the Borough's Engineering Office observe the construction of the projects, site plans, and subdivisions to ensure that the stormwater management measures are constructed and function as designed.

The Borough also prepared a Stormwater Pollution Prevention Plan (SPPP) that establishes a maintenance schedule for all existing stormwater related maintenance requirements. The Borough also initiated a local education program to educate property owners on the control of household waste, fertilizers, solids, floatable controls, pesticides and other methods to reduce stormwater pollutants that may adversely affect the Borough's waterways. For new development

and redevelopment projects meeting the stormwater management threshold, the Borough requires an operation and maintenance plan for all new development in accordance with the NJDEP's *New Jersey Stormwater Best Management Practices Manual* (BMP Manual). Copies of each maintenance plan are filed with the Borough's Department of Public Works.

Personnel from the Borough's Department of Public Works will perform inspections during the first two years of operation and/or after significant storms to ensure that the system is functioning properly. After this, annual checks will be done to identify maintenance needs. As part of these inspections, blockages must be cleared from inlets and outlets. Unhealthy vegetation may need to be tended or replaced. The design of stormwater management practices for water quality improvement is based primarily on removal of sediment. Therefore, at some point, accumulated material must be removed. Borough ordinances indicate that the inspection of systems is permissible on private property, upon giving reasonable notice, provided the necessary easements are in place. Ordinances also indicate a time frame for maintenance procedures to occur upon receiving notice from the Borough that maintenance is required and include penalties for non-compliance.

6.0 PLAN CONSISTENCY

6.1 REGIONAL STORMWATER MANAGEMENT PLANS

Currently, there are no adopted Regional Stormwater Management Plans (Regional Plans) developed for waters "within" the Borough. However, Regional Plans for the Parker's Creek (Shewsbury River) watershed are being developed. This MSWMP will be updated to be consistent with any Regional Plans or TMDLs that are established in the future. The Borough plans to take part in the development of any Regional Plans that affects waterbodies within or adjacent to the municipality.

6.2 TOTAL MAXIMUM DAILY LOADS

The Husky Brook at South Street has a proposed TMDL for fecal coliform extending for 1.7 river miles. Whale Pond Brook at Rt. 35 is also listed as having a TMDL for fecal coliform. This stream is listed as impaired for 3.7 river miles. It is important to note, however, that these are not stormwater specific TMDLs, and as such are not covered under this MSWMP. This MSWMP will be updated to be compliant with any TMDLs issued in the future. It should be noted that although the fecal coliform TMDL's are not stormwater specific, they are related in that stormwater is often a vehicle by which it migrates from land to open water. Therefore, the Borough should work to identify the source(s) and work to mitigate the impairments.

6.3 RESIDENTIAL SITE IMPROVEMENT STANDARDS (RSIS)

This Municipal Stormwater Management Plan is consistent with regulations established under the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21, and will be updated to remain consistent with any future updates of RSIS. Additionally, the Borough will use the latest version of the RSIS during its reviews of residential developments for stormwater management.

6.4 SOIL CONSERVATION

The Borough's Stormwater Management Control Ordinance will require that all new development and redevelopment projects comply with the Soil Erosion and Sediment Control Standards of New Jersey. In cooperation with the Freehold Soil Conservation District, Borough personnel will observe on-site soil erosion and sediment control measures as part of the construction site inspections and contact the District if corrective measures are needed.

All development and redevelopment projects shall use the most recent DelMarVa unit hydrograph for stormwater calculations. In addition the Freehold Soil Conservation District requires the use of the most recent design storm rainfall data for stormwater calculations. The National Oceanographic and Atmospheric Administration (NOAA), the agency that develops statistical estimates of rainfall amounts, has increased its estimates for the majority of storm events, particularly the larger events. The following table indicates the old and new twenty-four hour rainfall amounts in inches for Monmouth County.

Table 4: NRCS 24 Hour Design Storm Rainfall Depth (inches) – September 2004

Storm Period	1 yr.		2 yr.		5 yr.		10 yr.		25 yr.		50 yr.		100 yr.	
	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New
Monmouth County	2.8	**2.9**	3.4	**3.4**	4.4	**4.4**	5.3	**5.2**	6.0	**6.6**	6.5	**7.7**	7.5	**8.9**

Source: NOAA, New Jersey Department of Agriculture

6.5 MONMOUTH COUNTY GROWTH MANAGEMENT GUIDE

The Monmouth County Growth Management Guide, adopted in December 1995, sets forth a series of goals and objectives designed to enhance the quality of life for residents of Monmouth County. This plan is consistent with those objectives, which include:

- Encouraging the protection of the County's unique, diverse, natural and scenic natural resources; and
- Promote the protection of non-renewable natural resources; and

- Encouraging the protection and conservation of all water resources; and
- Promote the preservation and improvements of coastal water resources; and
- Promote the preservation and improvements of surface water quality; and
- Encourage the preservation and improvements of groundwater quality and quantity; and
- Promote the preservation, restoration, and enhancement of wetlands and stream corridors in order to protect the adjacent water bodies, such as streams, rivers, lakes, bays and oceans.

This plan is consistent with the County Growth Management Guide by encouraging the protection of stream corridors and encouraging flood control and ground water recharge and through the implementation of the principals of non-structural and structural strategies. This Plan is also consistent with the County Growth Management Guide, by preserving and protecting valuable natural features within the Borough.

The Monmouth County Planning Board is currently working on a Coastal Monmouth Regional Plan which will become part of the County's Growth Management Guide. This plan will be updated, as necessary, to be consistent with the County's Coastal Monmouth Plan, as it is established in the future.

6.6 STATE DEVELOPMENT OR REDEVELOPMENT PLAN (SDRP)

This plan is consistent with the plans and policies of the SDRP, which was adopted in 2001. The SDRP places the Borough of Eatontown with the Metropolitan Planning Area (PA1). The SDRP also identifies Eatontown at a Regional Center. According to the State Plan, most of the communities within the PA1 planning area are fully developed or almost fully developed with little vacant land available for new development. A Regional Centers provides for development along or near a Transportation Corridor and provides for high-intensity mixed used development with a density of more that 5,000 persons per square mile and has an emphasis on employment. This Plan is consistent with the State Plan by preserving and protecting the established character of the Borough, preserving and upgrading the existing utility infrastructure, providing adequate

open space facilities, and preserving and protecting valuable natural features within the Borough. The plan is also consistent in that it promotes redevelopment and development in areas with existing infrastructure and limits development is environmentally sensitive areas.

7.0 STORMWATER MANAGEMENT STRATEGIES

7.1 MASTER PLAN & ORDINANCE REVIEW

In 2005, the Borough had undertaken a review of its Master Plan and the Borough's Land Use and Zoning Ordinances, Chapter 89 of the Borough's code, entitled *Borough of Eatontown Land Use Ordinance* for consistency with the new stormwater regulations. Based on this review, the Board found that the following sections needed to be modified as follows to incorporate non-structural stormwater management strategies:

- **Section 89.7.8 Off-street Parking and Loading**: This section outlines the Borough's requirements for off street parking and loading. All off street parking (except 1 and 2 family residential) were required to be curbed and provide drainage. Additionally, loading areas were required to be screened. Shade trees were required in lots of ten or more spaces. *This section needed to be modified to allow for flush curbing or curb cuts. Also, this section required modification to encourage the use of the use of native vegetation in screening areas. Finally, this section needed to be amended to encourage landscape islands to aid in the disconnection of impervious surfaces.*

- **Section 89.7.10: Preservation of Natural Features**: Natural features, including trees, shrubs, streambeds and topsoil are to be preserved when practical. *This section needed to be updated to be in accordance with Soil Erosion and Sediment Control standards to help preserve topsoil during the construction process*. This section also describes the Borough's stream corridor buffering requirements and also sets the encroachment limit on residential development for streams. *This section needed to be updated to include a buffer zone at least as stringent as that required by the State's Stream Corridor Buffer Limits for any Category One Stream for both residential and non-residential development.*

- **Section 89.7.11: Landscaping, Buffering and Screening**: This section of code outlines the Borough's requirements for buffer zones and screening between all residential and non-residential uses. The section also describes the use of earthen berms, fences, walls, and landscaping and when they are required. *This section needed to be updated to encourage the use of native vegetation, which requires less water and fertilizer. Additionally, this section needed to encourage the use of these buffer zones as vegetated filter strips or non-structural conveyances for stormwater.*

- **Section 89.7.18 Performance Standards**: *This section needed to be amended to include the performance standards detailed in this MSWMP for stormwater management and as outlined in N.J.A.C. 7:8.*

- **Section 89.8: Required Improvements:** This section mandates curbs or curbs and gutters be installed on all streets, as well as sidewalks. *This section needed to be altered to encourage the use of permeable paving for sidewalks where not prohibited by engineering standards. In addition, this section needed to be amended to encourage the use of non-structural stormwater conveyances along with the use of curb cuts and curb stops.*

- **Section 89.8.2: Off-tract Improvements:** This section states the Borough's requirements for off-tract improvements. *The drainage portion needed to be updated to conform to the design and performance standards stated within this MSWMP and as outlined in N.J.A.C. 7:8.*

- **Section 89.9.4 Cluster Development**: This section states the requirements of the Borough for Cluster Development. Currently there's a 20% Open Space requirement, as well as, the preservation of natural features. *This section needed to be modified to allow for a greater percentage of Open Space. In addition, this section needed to be revised to encourage the use of native vegetation and landscaping to allow for the disconnection of impervious surfaces and groundwater recharge.*

- **Section 89.9.6: Curb and Gutter:** This section also states the Borough's requirement for curbs and gutters to be installed along all streets. *This section needed to be updated to allow the use of flush cut curbing and curb stops where safety will not be compromised. Additionally this section needed to be modified to encourage the use of non-structural stormwater BMPs.*

- **Section 89.9.16 Sidewalks and Aprons**: This section requires concrete sidewalks to be constructed along all streets. *This section needed to be updated to allow for the use of pervious paving materials or alternatives to sidewalks, such as paths, to be constructed where allowable by safe engineering practices.*

- **Section 89.9.18 Storm Drainage Facilities:** This section describes the design, construction, and performance standards that are required for the construction of storm drainage facilities. *This section needed to be updated to comply with the design, performance, and safety standards described in this MSWMP and those recommended in the NJDEP BMP Manual.*

Revisions of the ordinances identified above allowed the incorporation of the non-structural strategies. Amended ordinances were submitted to the County for review and approval in February 2007. A copy was also sent to the Department of Environmental Protection at that time.

7.2 NON-STRUCTURAL STRATEGIES

This MSWMP encourages the use of Low Impact Design Methods and recommends the practical use of the following non-structural strategies for all major developments' in accordance with the NJDEP BMP Manual:

1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.

2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.
3. Maximize the protection of natural drainage features and vegetation.
4. Minimize the decrease in the pre-construction "time of concentration."
5. Minimize land disturbance including clearing and grading.
6. Minimize soil compaction.
7. Provide vegetated open-channel conveyance systems that discharge into and through stable vegetated areas.
8. Provide preventative source controls.

In addition, the NJDEP BMP Manual further requires an applicant seeking approval for a major development[1] to specifically identify how these non-structural strategies have been incorporated into the development's design. Finally, for each of those non-structural strategies that were not able to be incorporated into the development's design due to engineering, environmental, or safety reasons, the applicant must provide a basis for this contention.

Recommended Measures

Recommendations in the BMP Manual may be implemented through the use of:

- **Vegetated Filter Strips**

  Vegetated filter strips are best utilized adjacent to a buffer strip, watercourse or drainage swale since the discharge will be in the form of sheet flow, making it difficult to convey the stormwater downstream in a normal conveyance system (swale or pipe).

- **Stream Corridor Buffer Strips**

  Buffer strips are undisturbed areas between development and the receiving waters. There are two management objectives associated with stream and valley corridor buffer strips:

[1] Major Development – means any 'development' that provides for ultimately disturbing one or more acres of land or increasing impervious surface by one-quarter acre or more. Disturbance for the purpose of this rule is the placement of impervious surface or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Projects undertaken by any government agency which otherwise meet the definition of 'major development' but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered "major development".

- To provide buffer protection along a stream and valley corridor to protect existing ecological form and functions; and
- To minimize the impact of development on the stream itself (filter pollutants, provide shade and bank stability, reduce the velocity of overland flow).

Buffers only provide limited benefits in terms of stormwater management; however, they are an integral part of a system of best management practices.

- **The Stabilization of Banks, Shoreline and Slopes**

  The root systems of trees, shrubs and plants effectively bind soils to resist erosion. Increasing the amount of required plant material for new and redeveloped residential and non-residential sites should be encouraged throughout the Borough. Planting schemes should be designed by a certified landscape architect to combine plant species that have complementary rooting characteristics to provide long-term stability.

- **Deterrence of Geese and Deer**

  Maintaining or planting dense woody vegetation around the perimeter of a pond or wetland is the most effective means of deterring geese from taking over and contaminating local lakes and ponds. Minimizing the amount of land that is mowed will limit the preferred habitat for geese. Also the planting of deer tolerant vegetation adjacent to waterbodies is a means of deterring deer by minimizing food sources. However, if these actions are not sufficient the Borough should investigate other means of deterrence.

- **Fertilizers**

  The use of fertilizers to create the “perfect lawn” is an increasing common problem in many residential areas. Fertilizer run-off increases the level of nutrients in water bodies

and can accelerate eutrophication[2] in the lakes and rivers and continue on to the coastal areas. The excessive use of fertilizers causes nitrate contamination of groundwater and may lead to levels of contamination in drinking water that are above recommended safety levels. Good fertilizer maintenance practices help in reducing the amount of nitrates in the soil and thereby lower its content in the water. Initially, the Borough should work with the NJDEP to educate homeowners of the impacts of the overuse of fertilizers. This discussion should include other techniques to create a "green lawn" without over fertilizing. Almost as important as the use of fertilizer, is the combination of over fertilizing and over watering lawns. In many cases this leads to nutrient rich runoff, which ultimately migrates to a nearby stream, lake or other water body. If fertilizer is applied correctly, the natural characteristics as the underlying soils will absorb or filter out the nutrients in the fertilizer.

- **Minimizing Lawns**

  Reducing the amount of manicured lawn area and increasing the amount of woods and native vegetation provides several benefits. Native vegetation requires less fertilizer; it filters out more pollutants; and it promotes groundwater recharge.

- **Unpaved Roads and Driveways**

  While there are no unpaved public roads in the Borough, there are a few privately maintained unpaved roads or driveways. There is a need to manage the runoff from these roadways. Poorly maintained roads and driveways may contribute to water quality problems and erosion from unpaved roads may increase non-point source pollution. This MSWMP recommends utilizing BMPs to properly manage existing unpaved roads.

7.3 STRUCTURAL STORMWATER MANAGEMENT[3]

In Chapter 9 of its BMP Manual the NJDEP identifies several structural stormwater management options. Structural methods should only be used after all non-structural strategies are deemed

[2] Eutrophication – The normally slow aging process by which a lake evolves into a bog or marsh and ultimately assumes a completely terrestrial state and disappears.
[3] Definitions provided in the NJDEP – Stormwater Best Management Practices Manual at: http://www.njstormwater.org/tier_A/ bmp_manual.htm

impracticable or unsafe. Specifically, the Borough encourages the use of structural stormwater management systems in a manner that maximizes the preservation of community character:

- **Bioretention Systems**

  A bioretention system consists of a soil bed planted with native vegetation located above an underdrained sand layer. It can be configured as either a bioretention basin or a bioretention swale. Stormwater runoff entering the bioretention system is filtered first through the vegetation and then the sand/soil mixture before being conveyed downstream by the underdrain system. Runoff storage depths above the planting bed surface are typically shallow. The adopted Total Suspended Solids (TSS) removal rate for bioretention systems is 90%.

- **Constructed Stormwater Wetlands**

  Constructed stormwater wetlands are wetland systems designed to maximize the removal of pollutants from stormwater runoff through settling and both uptake and filtering by vegetation. Constructed stormwater wetlands temporarily store runoff in relatively shallow pools that support conditions suitable for the growth of wetland plants. The adopted removal rate for constructed stormwater wetlands is 90%.

- **Dry Wells**

  A dry well is a subsurface storage facility that receives and temporarily stores stormwater runoff from roofs of structures. Discharge of this stored runoff from a dry well occurs through infiltration into the surrounding soils. A dry well may be either a structural chamber and/or an excavated pit filled with aggregate. Due to the relatively low level of expected pollutants in roof runoff, a dry well cannot be used to directly comply with the suspended solids and nutrient removal requirements contained in the NJDEP Stormwater Management Rules at N.J.A.C. 7:8. However, due to its storage capacity, a dry well may be used to reduce the total amount of stormwater runoff that a roof would ordinarily discharge to downstream stormwater management facilities. Care should be taken with the location and size of drywells due to potential adverse impacts on basements and

foundations.

- **Extended Detention Basins**

  An extended detention basin is a facility constructed through filling and/or excavation that provides temporary storage of stormwater runoff. It has an outlet structure that detains and attenuates runoff inflows and promotes the settlement of pollutants. An extended detention basin is normally designed as a multistage facility that provides runoff storage and attenuation for both stormwater quality and quantity management. The adopted TSS removal rate for extended detention basins is 40% to 60%, depending on the duration of detention time provided in the basin.

- **Infiltration Basins**

  An infiltration basin is a facility constructed within highly permeable soils that provides temporary storage of stormwater runoff. An infiltration basin does not normally have a structural outlet to discharge runoff from the stormwater quality design storm, but may require an emergency overflow for extraordinary storm events. Instead, outflow from an infiltration basin is through the surrounding soil. An infiltration basin may also be combined with an extended detention basin to provide additional runoff storage for both stormwater quality and quantity management. The adopted TSS removal rate for infiltration basins is 80%.

- **Manufactured Treatment Devices**

  A manufactured treatment device is a pre-fabricated stormwater treatment structure utilizing settling, filtration, absorptive/adsorptive materials, vortex separation, vegetative components, and/or other appropriate technology to remove pollutants from stormwater runoff. The TSS removal rate for manufactured treatment devices is based on the NJDEP certification of the pollutant removal rates on a case-by-case basis. Other pollutants, such as nutrients, metals, hydrocarbons, and bacteria can be included in the verification/certification process if the data supports their removal efficiencies.

- **Pervious Paving Systems**

  Pervious paving systems are paved areas that produce less stormwater runoff than areas paved with conventional paving. This reduction is achieved primarily through the infiltration of a greater portion of the rain falling on the area than would occur with conventional paving. This increased infiltration occurs either through the paving material itself or through void spaces between individual paving blocks known as pavers. Pervious paving systems are divided into three general types. Each type depends primarily upon the nature of the pervious paving surface course and the presence or absence of a runoff storage bed beneath the surface course. Porous paving and permeable pavers with storage bed systems treat the stormwater quality design storm runoff through storage and infiltration. Therefore, these systems have adopted TSS removal rates similar to infiltration structures. Care must be taken in the use of pervious systems to avoid subgrade instability and frost related deterioration. Pervious paving systems also require significant maintenance to maintain their designed porosity.

- **Sand Filters**

  A sand filter consists of a forebay and underdrained sand bed. It can be configured as either a surface or subsurface facility. Runoff entering the sand filter is conveyed first through the forebay, which removes trash, debris, and coarse sediment, and then through the sand bed to an outlet pipe. Sand filters use solids settling, filtering, and adsorption processes to reduce pollutant concentrations in stormwater. The adopted TSS removal rate for sand filters is 80%.

- **Vegetative Filters**

  Vegetated filter strips are engineered stormwater conveyance systems that treat small drainage areas. Vegetative filters remove pollutants, and promotes infiltration of the stormwater.

  A vegetative filter is an area designed to remove suspended solids and other pollutants from stormwater runoff flowing through a length of vegetation called a vegetated filter

strip. The vegetation in a filter strip can range from turf and native grasses to herbaceous and woody vegetation, all of which can either be planted or indigenous. It is important to note that all runoff to a vegetated filter strip must both enter and flow through the strip as sheet flow. Failure to do so can severely reduce and even eliminate the filter strip's pollutant removal capabilities. The total suspended solid (TSS) removal rate for vegetative filters will depend upon the vegetated cover in the filter strip.

- **Wet Ponds**

  A wet pond is a stormwater facility constructed through filling and/or excavation that provides both permanent and temporary storage of stormwater runoff. It has an outlet structure that creates a permanent pool and detains and attenuates runoff inflows and promotes the settlement of pollutants. A wet pond, known as a retention basin, can also be designed as a multi-stage facility that provides extended detention for enhanced stormwater quality design storm treatment and runoff storage and attenuation for stormwater quantity management. The adopted TSS removal rate for wet ponds is 50% to 90% depending on the permanent pool storage volume in the pond and the length of retention time provided by the pond.

Table 5, below, summarizes the approximate TSS removal rates for these structures. Final TSS removal rates should be calculated for each structure based on its final design parameters.

Table 5: TSS Removal Rates for BMPs

Best Management Practice (BMP)	Adopted TSS Removal Rate (%)
Bioretention System	90
Constructed Stormwater Wetland	90
Dry Well	Volume Reduction Only
Extended Detention Basin	40-60*
Infiltration Structure	80
Manufactured Treatment Device	See N.J.A.C 7:8-5.7(d)
Pervious Paving System	Volume Reduction Or 80 (with infiltration bed)
Sand Filter	80

Vegetative Filter	60-80
Wet Pond	50-90*

*based on volume and detention time
Source: NJDEP BMP Manual, Apr. 2004.

Each of these structures has advantages and disadvantages to manage stormwater, and should be evaluated carefully prior to design.

8.0 LAND USE/BUILD-OUT ANALYSIS

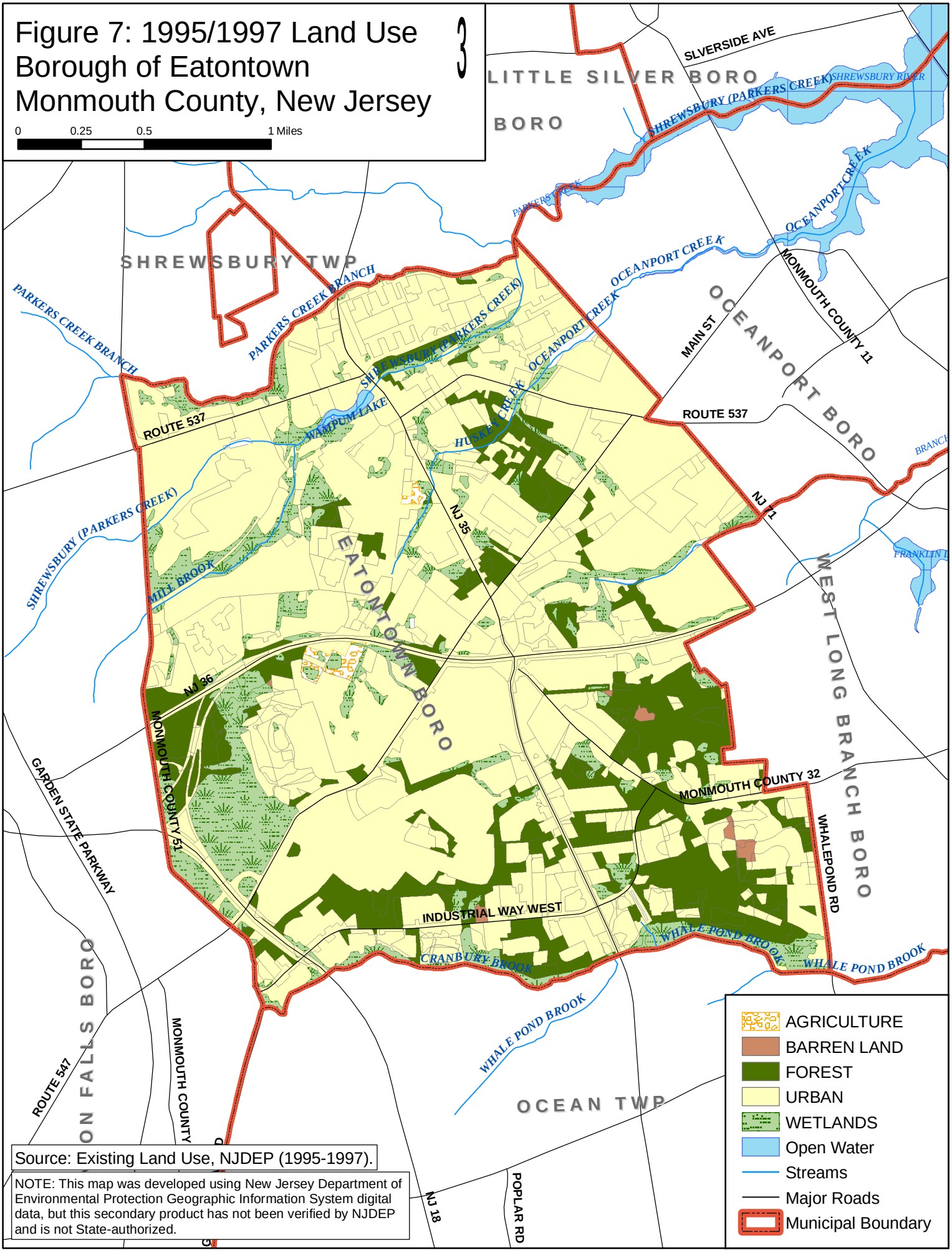
The Borough of Eatontown has less than one (1) square mile of undeveloped land within its borders, and even fewer acres of developable or vacant land, as described in the *Vacant Land Inventory and Analysis Report* of August 2002 (See Section 12.0 - Appendix). Therefore the Borough is exempt from the NJDEP regulations requiring the development of a full build-out analysis, which would indicate the potential for development within the Borough.

Refer to Figure 7 for a copy of the Borough's 1995/1997 Land Use Map and Figure 8 for the Zoning Map. Figure 9 illustrates the Hydrologic Units (HUC-14s) within the Borough and Figure 10 shows the constrained lands. As shown on these figures as well as in the *Vacant Land Inventory and Analysis Report* of August 2002, the Borough has 293.05 acres of private vacant land, less than half (140.85 acres) is unencumbered by environment restrictions. Since the Borough does not have a lot coverage ordinance, ultimate build-out could result a significant amount of additional coverage. The Borough should implement measures to minimize additional pollution into the surrounding water bodies.

Although the Borough is essentially developed, on May 13, 2005, the Department of Defense announced its plans to close Fort Monmouth. According to the Fort Monmouth website (http://www.monmouth.army.mil/C4ISR/brac.shtml) Fort Monmouth will close no later than September 15, 2011. On April 28, 2006 Governor Corzine signed a bill authorizing the formation of the Fort Monmouth Economic Revitalization Planning Authority (FMERPA) . Additionally, a Fort Monmouth Reuse Committee has been established to develop plans for redevelopment of Fort Monmouth. As Army operations are shut down, the base will be redeveloped for government, public or private use to be determined by FMERPA. Since the redevelopment studies have not been completed to date, future development plans for the Fort remain uncertain at this time.

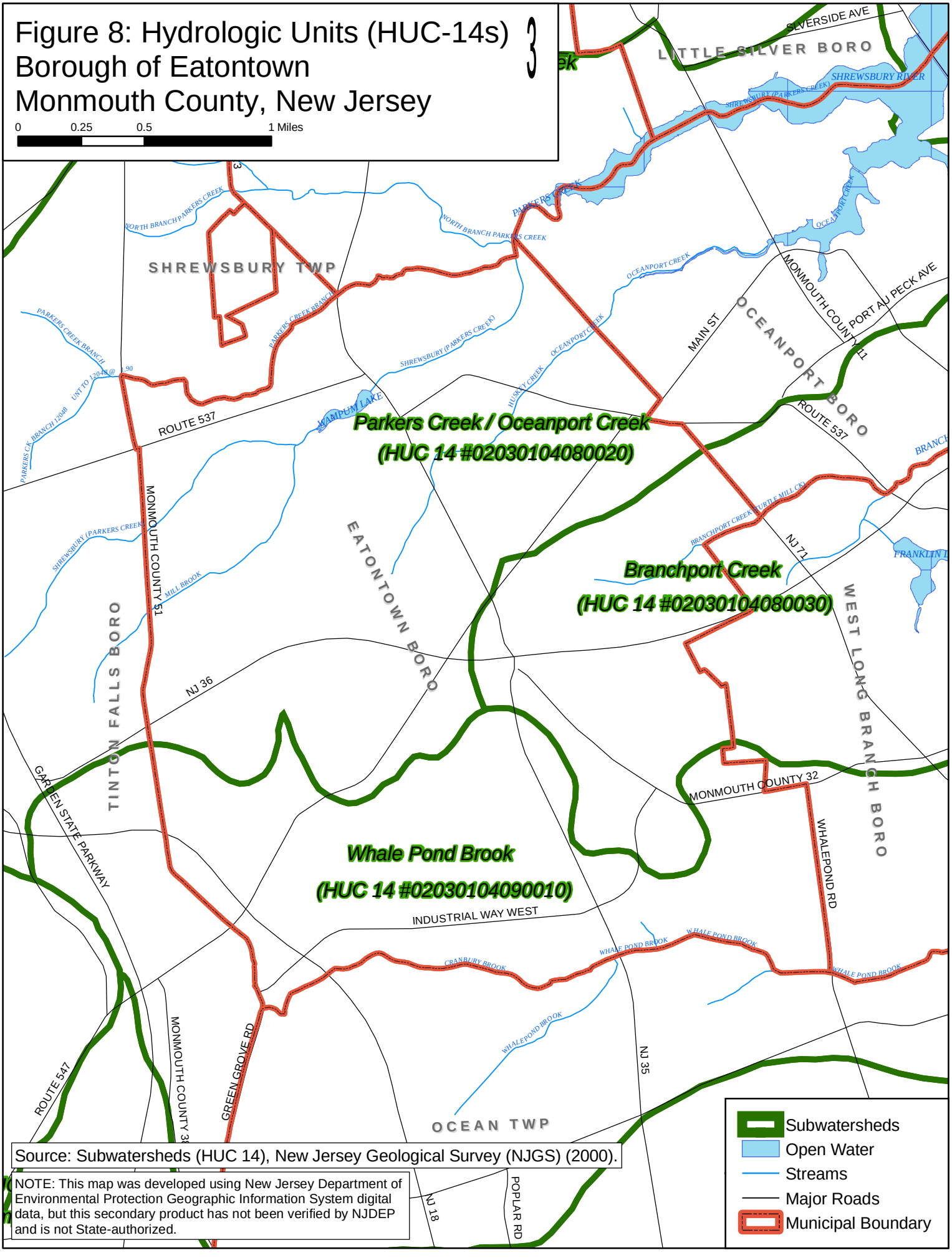
The Fort has over 400 acres within the Borough limits, which is approximately 1/8th of the Borough's total land mass. Therefore, the Fort's redevelopment could have a significant impact

on stormwater management. As the redevelopment plans for the Fort are finalized, the MSWMP should be amended to address the impacts of the redevelopment or build-out of Fort Monmouth.



Source: Existing Land Use, NJDEP (1995-1997).

NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.



Source: Subwatersheds (HUC 14), New Jersey Geological Survey (NJGS) (2000).

NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

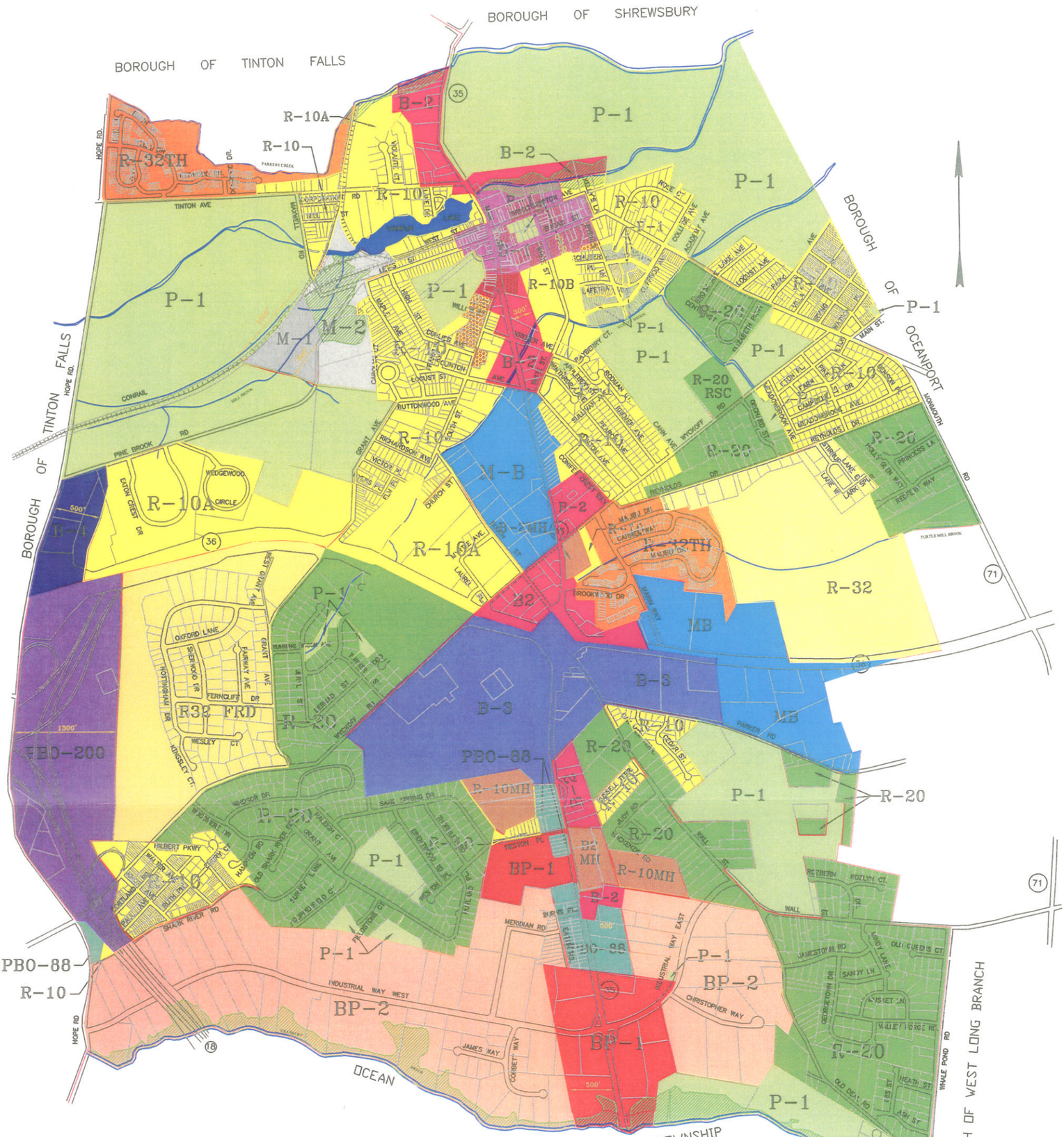


Figure 9: ZONING MAP

R-32	Residence Zone	
R-32 FRD	Residence Zone	
R-32 TH	Residence Zone	
R-20	Residence Zone	
R-20 RSC	Residence Zone	
R-10	Residence Zone	
R-10A	Residence Zone	
R-10B	Residence Zone	
R-10MH	Residence Zone	
B-1	Business Zone	
B-2	Business Zone	
B-2MH	Business Zone	
B-3	Business Zone	
B-4	Business Zone	
M-B	Manufacturing-Business Zone	
PBO-88	Professional, Business & Office Zone	
PBO-200	Professional, Business & Office Zone	
BP-1	Business Park Zone	
BP-2	Business Park Zone	
M-1	Manufacturing Zone	
M-2	Manufacturing Zone	
P-1	Public Land Zone	
	Historic District	
	Flood Prone Zone (100-Year Floodplain)	

Flood Prone Zone based on Flood Insurance Rate Maps (effective 9/16/81)
Zone boundary lines are approximate see FIRM maps for actual delineation.

BOROUGH OF EATONTOWN
Monmouth County, New Jersey

Scale In Feet
0 500 1000 1500 2000

AUGUST 12, 1997
FEBRUARY 10, 1997

T&M ASSOCIATES

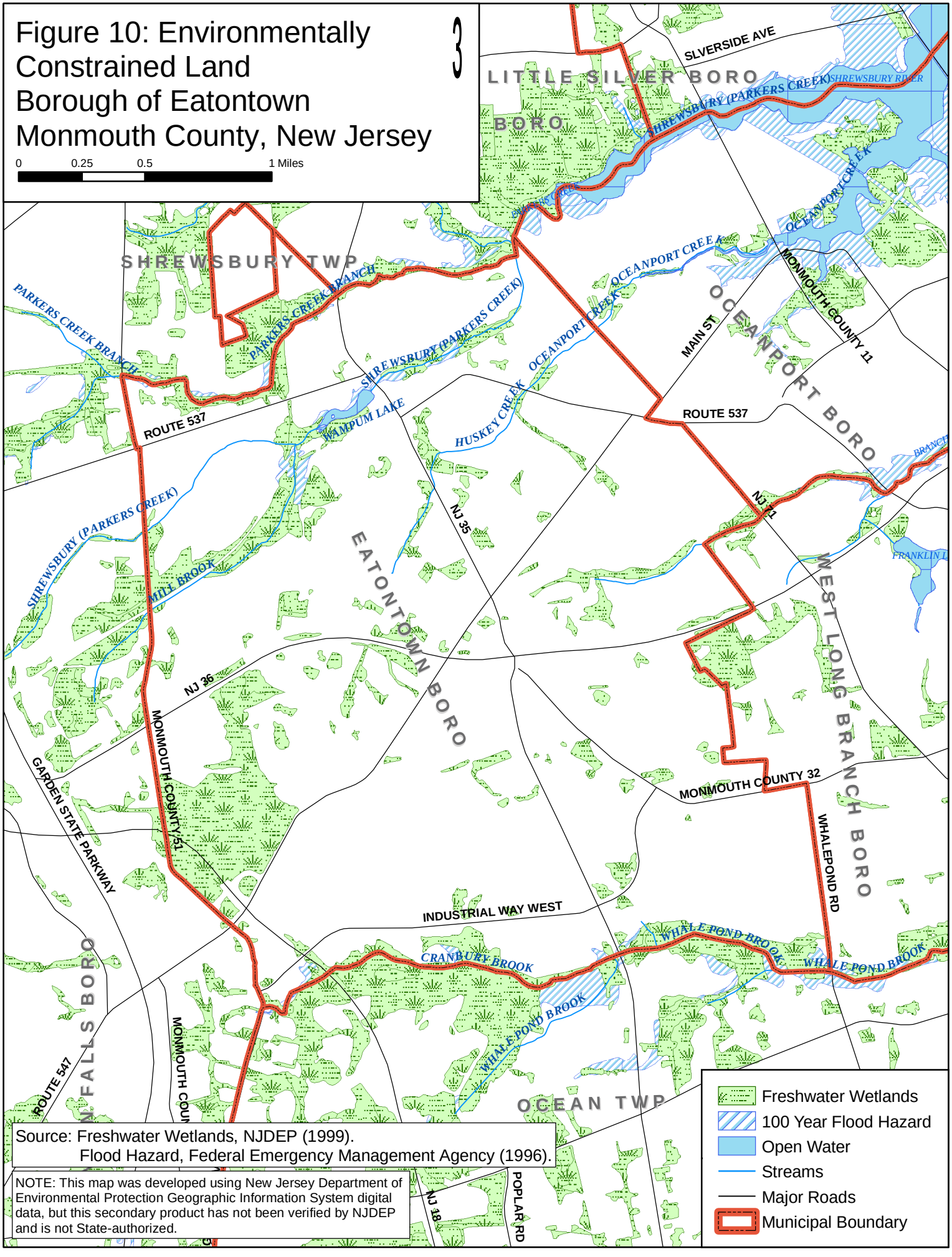


Figure 10: Environmentally Constrained Land
Borough of Eatontown
Monmouth County, New Jersey
3
0 0.25 0.5 1 Miles
LITTLE SILVER BORO
SLVERSIDE AVE
SHREWSBURY (PARKERS CREEK)
SHREWSBURY RIVER
OCEANPORT CREEK
SHREWSBURY TWP
PARKERS CREEK BRANCH
MONMOUTH COUNTY 11
MAIN ST
OCEANPORT BORO
ROUTE 537
WAMPUM LAKE
HUSKEY CREEK
NJ 35
NJ 71
MILL BROOK
EATONTOWN BORO
WEST LONG BRANCH BORO
NJ 36
MONMOUTH COUNTY 51
GARDEN STATE PARKWAY
MONMOUTH COUNTY 32
WHALEPOND RD
INDUSTRIAL WAY WEST
CRANBURY BROOK
WHALE POND BROOK
OCEAN TWP
ROUTE 547
NJ 18
POPLAR RD
Freshwater Wetlands
100 Year Flood Hazard
Open Water
Streams
Major Roads
Municipal Boundary
Source: Freshwater Wetlands, NJDEP (1999).
Flood Hazard, Federal Emergency Management Agency (1996).
NOTE: This map was developed using New Jersey Department of Environmental Protection Geographic Information System digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

9.0 MITIGATION PLAN

This mitigation plan is provided for proposed development or redevelopment projects that seek a variance or exemption from the stormwater management design and performance standards set forth in this MSWMP and N.J.A.C. 7:8-5.

9.1 MITIGATION PROJECT CRITERIA

To grant a variance or exemption from the stormwater regulations, new development and redevelopment plan applications must propose a mitigation project located within the same drainage basin as the proposed development/redevelopment. Proposed mitigation projects must provide for additional groundwater recharge benefits, protection from stormwater runoff quantity or quality from previously developed property that does not currently meet the design and performance standards outlined in this MSWMP. Mitigation projects should also be as close in terms of hydrology and hydraulics to the proposed development/redevelopment as possible.

Projects must be proposed on an equivalent basis. Developers must propose a mitigation project similar in kind to the variance or exemption being requested. Proposed mitigation projects cannot adversely impact the existing environment.

9.2 DEVELOPER'S MITIGATION PLAN REQUIREMENTS

Proposed mitigation projects shall have Mitigation Plans submitted to the Borough for review and approval prior to granting final approval for site development. Developers should include the following in a Mitigation Plan:

- Mitigation Project Name, Owner name and address, Developer name and address, Mitigation Project Location, Drainage Area, Cost Estimate;
- Proposed mitigation strategy and impact to sensitive receptor. What is being impacted, mitigated, and how;

- Legal authorization required for construction and maintenance;
- Responsible Party including: required maintenance, who will perform the maintenance, proposed cost of maintenance, and how it will be funded;
- All other permits required for construction of the mitigation project;
- Cost estimate of construction inspection; and
- Reason a waiver or exemption is required and supporting evidence.

Due to the lack of vacant or developable land, it is anticipated that the majority of the mitigation projects proposed will result in retrofitting/rehabilitation of existing stormwater facilities and natural infrastructures. Therefore, the Applicant may select one of the following strategies to be developed into a potential mitigation project. More detailed information may be available from the Borough or the Borough Engineer's office. It is the developer's responsibility to provide a detailed study of any proposed mitigation project, and provide the Borough with a proposed mitigation plan for review and approval.

- Desilt/desnag ditches on Industrial Way.
- Desilt/desnag streams throughout the Borough.
- Rehabilitate existing detention facilities, remove scavenger vegetation and silt, address compaction, and restore grasses.
- Repair/restore conduit outlet protection in corridors.
- Address roadside re-vegetation and erosion.
- Desilt roadside culverts.
- Address BMP recommendations from the Shrewsbury River Watershed Study.
- Installation of BMP devices for outfall discharges.
- Installation of BMP devices such as rain water garden islands, infiltration systems and green roofs for the buildings, for existing commercial and industrial facilities which have a significant amount of imperviously converge, including, but not limited to, Monmouth Mall and the buildings in the industrial park.

10.0 RECOMMENDATIONS

The Conservation Plan Element and the Utility Service Plan Element of the *Eatontown Borough Master Plan*, dated January 2004, includes recommendations with respect to stormwater management and conservation of natural resources of Eatontown. The following are additional recommendations associated with this Stormwater Management Plan Element of the *Master Plan*:

- ***Recommendation A: Review and update the existing Development/Zoning Regulations to implement the principals of non-structural and structural stormwater management strategies to reduce stormwater quantity, improve stormwater quality and to maintain or increase groundwater recharge.***

  Portions of the existing Development/Zoning Regulations are inconsistent with recently adopted New Jersey Department of Environmental Protection (NJDEP) Stormwater Management Regulations and the NJDEP *Best Management Practices for the Control of Non-Point Source Pollution from Stormwater Manual*. Some of these inconsistencies are identified in Section 7.1 above. The Borough should update their existing regulations to be in conformance with these regulations and to minimize inconsistencies or conflicts.

- ***Recommendation B: To improve stormwater management, water quantity at and groundwater recharge, consider investigating reducing the permitted amount of building, parking lots and impervious coverage throughout the Borough.***

  Eatontown typically permits less coverage than adjacent municipalities. Also, the existing Development Regulations strive to protect environmentally sensitive areas. Recent development trends show an increasing number of larger homes that typically include large circular driveways and accessory structures such as tennis courts and sports courts. The Borough should revisit the current Development Regulations to determine if additional

safeguards can be implemented to improve stormwater management and water quality relating to these trends.

The Borough should also reevaluate its parking lot design standards. Parking lots generate large volumes of stormwater. The Borough should evaluate the existing parking requirement and design standards to prevent over-development of parking lots and to encourage the separation ("disconnection") of impervious areas with landscaping areas to collect stormwater and encourage groundwater recharge.

- ***Recommendation C: Work with residents, property owners and businesses to encourage the installation of vegetation along stream corridors and within existing stormwater detention facilities.***

Landscaping with native vegetation along stream corridors and within detention basins improves the quality of stormwater. As such, Eatontown should investigate requiring re-vegetation of stream corridor buffers and detention basins. Although this is not currently a requirement, many older developments have manicured lawns abutting the streams or detention basins, which provide less filtering and introduce fertilizers to adjacent surface water and stormwater facilities.

- ***Recommendation D: Seek to limit encroachments into existing conservation easements.***

A significant number of properties throughout the Borough have existing conservation easements. Eatontown's Conservation Easement Requirement prohibits the removal of trees and ground cover within a conservation easement. The Conservation Easement Requirement also prohibits the building of any structures, walls, or fences within the easement. Despite the existing regulations, a number of residents have encroached into the conservation easement. The Borough has implemented a procedure to identify new residents with properties having conservation easement restrictions. The Borough should also evaluate their

existing enforcement program, implement an education program on the use of easements, work with property owners to mark existing easements more conspicuously, and seek to ensure revegetation of disturbed easements.

- ***Recommendation E: Educate residents on the impacts of the overuse of fertilizers and good fertilizer maintenance practices.***

As stated in Section 6.2, the overuse of fertilizers has a significant detrimental impact on surface water bodies and groundwater. The Borough should work with the NJDEP to educate residents on these impacts and encourage residents to use techniques to create a "green lawn" without over- fertilizing and/or to convert lawn areas to other kinds of vegetation that do not require fertilization and other chemical treatments. Many lawn services also "overspray" fertilizer onto roadways and adjacent properties. The Borough should investigate methods to minimize the application of fertilizers beyond property lines.

- ***Recommendation F: Educate residents on techniques to deter geese and deer.***

Geese population can take over and contaminate local water bodies. The planting of tall grasses and shrubs (such as tall fescue or mix grasses with periwinkle, ivy, myrtle, or pachysandra) around the perimeter of a water body limits the visibility of any potential predators and provides an effective means of deterring geese. Another method of deterring geese is through the use of trained Border Collies. These dogs use a wolf-like stare to influence the geese into flight or movement. The geese perceive this stalking manner as a threatening predatory behavior although the geese are never touched.

The deer population in New Jersey is estimated to be increasing by about 40% annually. These deer consume native plant material, such as saplings, shrubs and ground cover, which are vital to a healthy forest and stream corridor buffer. Deer naturally favor certain plants over others. The reduced plant diversity allows for the proliferation of invasive plant species. The Monmouth County Parks System is the third largest landowner within the County. As

such they established a Deer Management Program in 2007. This program outlines both lethal and non-lethal techniques to control the deer population. Some of these include the installation of deer protection fencing at least 8 to 10 feet in height; treating plant material with commercially available repellents to discourage deer from eating them; and avoid cultivation of their favorite plant material, such as hosta.

- ***Recommendation G: Seek to ensure the inspection, monitoring, and maintenance of all stormwater management facilities and develop strategies for all existing and future maintenance and improvements.***

  Stormwater facilities require regular maintenance to ensure effective and reliable performance. Failure to perform the necessary maintenance can lead to diminished performance, deterioration and failure. In addition, a range of health and safety problems, including mosquito breeding and the potential for drowning, can result from improperly maintained facilities. To minimize these risks, the Borough should implement a procedure for regular inspection, monitoring, and maintenance of Borough owned stormwater facilities.

  Additionally, there are a number of privately maintained stormwater facilities within the Borough. The Borough should work with the various property owners, residents and business owners to identify maintenance and/or improvements needs and develop strategies for regular inspection and maintenance of these facilities.

  The Borough should also encourage the use of low impact design methods and non-structural strategies that require less maintenance.

- ***Recommendation H: Work with the Monmouth County Mosquito Extermination Commission to monitor existing and proposed BMP's.***

  Many of the recommended non-structural and structural strategies are designed to retain water for a period of time to promote groundwater recharge. These conditions could be

favorable to mosquito breeding habitats. To date there is no data relating mosquito breeding and best management practices. The Borough should coordinate new development and redevelopment project using non-structural and structural strategies with the Monmouth County Mosquito Extermination Commission so that these facilities can be periodically monitored, inspected and maintained. Developers and the Borough should also solicit input from the Monmouth County Mosquito Extermination Commission early in the design process for new facilities to obtain additional guidance and recommendations.

- ***Recommendation I: Encourage existing storm drains to be replaced with bicycle safe grates and Campbell Foundry Model #N-2-ECO inlet heads (or approved equal) to prevent floatable and solid debris from entering the storm water conveyance system.***

Typical roadway debris, such as bottles and cans, can easily enter stormwater conveyance systems through typical inlet openings. This debris is then transported downstream into the receiving water bodies. By replacing existing storm drain inlets with new inlet grates and inlet heads, which have a maximum opening size of 2-inches by 4-inches, the amount of debris entering the stream can be reduced, improving water quality.

- ***Recommendation J: Encourage regular street sweeping for public and private roads and parking lots.***

Salt and sand are applied to roadways and paved areas in the winter months. This salt and sand is then washed into the storm drain conveyance system and then is transported to the receiving water body. This material silts and pollutes the Borough streams. Frequent sweeping of streets and parking lots, particularly after winter storms, can minimize the impacts on water bodies.

✧ ***Recommendation K: Work with the State, County and local residents to improve stormwater management at Wampum Lake.***

Wampum Lake Park is a valued recreation area located in the northerly portion of the Borough. The Borough has rehabilitated the slide gates and the dam spillways at Wampum Lake. The Borough has obtained approval from the NJDEP to open the gate in advance of a predicted major storm event; lowering the level of the lake approximately 1 foot. This provides additional capacity within the lake for the treatment of stormwater discharge.

The Borough has also been working with adjacent property owner to obtain access easement along the perimeter of the lake. These easements will serve as a buffer to the lake and will allow the future construction of a greenway trail along the perimeter of the lake.

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12.0 APPENDIX

VACANT LAND INVENTORY & ANALYSIS REPORT

Vacant Land Inventory and Analysis Report

Prepared for

Borough of Eatontown
Monmouth County, New Jersey

Prepared August 16, 2002 by:

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The original of this document has been signed and sealed in accordance with New Jersey Law

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INTRODUCTION

COAH regulations permit municipalities to request an adjustment from their housing need due to a lack of available vacant and developable land. Pursuant to N.J.A.C. 5:93-4.2, municipalities requesting an adjustment of their fair share obligation due to lack of available land must submit an inventory of vacant and undeveloped parcels by lot and block, with property ownership and acreage. All parcels identified as vacant in the Borough's tax assessment records are listed in the Accompanying Vacant Land Inventory Table. Where two or more contiguous vacant lots are in common ownership, the parcels have been combined into a single tract on the inventory. Vacant sites have also been mapped in the accompanying Vacant Land Inventory Map in Appendix B.

In addition, COAH requires that a municipality also consider sites that are developed with relatively "low-density" development as part of its vacant land analysis. These sites may include golf courses not owned by its members, farms in State Development and Redevelopment planning areas one, two and three; driving ranges, nurseries, and nonconforming uses. Consequently, the Township has included the Old Orchard Country Club golf course and several farm qualified properties in its inventory. Farm qualified properties are identified with site numbers beginning with an 'F' prefix.

The suitability of the property containing Mr. B's Golf Center Driving Range (a.k.a. the Weston site) is addressed in a separate site suitability report prepared by T&M Associates. Based on the planning analysis contained in that report, the Weston site has been determined to be unsuitable for inclusionary development. The purpose of a vacant land analysis is to determine if a site or portion of a site is suitable for affordable housing development. Since the Weston site is not suitable for the reasons set forth in the Weston site suitability report, the Weston site is not included in the calculation of Eatontown's Realistic Development Potential (RDP).

PERMITTED EXCLUSIONS

COAH regulations also establish the criteria by which sites or portions of sites in a municipal vacant land inventory may be excluded from the calculation of the municipality's RDP. Environmentally sensitive areas may be excluded from consideration, including flood hazard areas, wetlands, and areas characterized by steep slopes (defined in COAH's regulations as slopes with a grade of greater than fifteen percent) that render a site or portion of a site unsuitable for low and moderate income housing. In addition, small isolated lots having an insufficient acreage to generate an affordable housing setaside as part of an inclusionary development may be excluded. Vacant lots under development as part of an approved subdivision or that received site plan approval for development may also be excluded. Landlocked parcels or sites with limited or no access may also be excluded from the calculation of the RDP.

The Vacant Land Inventory Table in Appendix A provides a parcel by parcel description of the exclusions that have been made pursuant to COAH's guidelines. The general categories of exclusions are summarized as follows:

1. Small and Isolated Sites. The majority of sites listed in the vacant land inventory consist of small and isolated vacant lots that are too small to be realistically developed with an inclusionary development and have been eliminated pursuant to N.J.A.C. 5:93-4.2(c)2. Many of these sites are located in single-family residential neighborhoods. Several are located in commercial or industrial areas and, in addition to their size, also are excluded due to incompatible land use arrangements.

COAH's minimum presumptive density in calculating the RDP is six units per acre with a twenty percent setaside. At six units per acre, at least 0.8 acres must be present to yield one affordable unit at a 20 percent setaside. Consequently, properties with less than 0.8 acres have been excluded. A field investigation was undertaken to confirm that the larger of these small isolated lots (0.5 to 0.8 acres) are not in areas where the application of a higher presumptive density would be appropriate. As a result of this investigation, these lots also were eliminated.

2. Environmental Constraints. Environmentally constrained lands may be eliminated pursuant to N.J.A.C. 5:93-4.2(e)2. Environmental constraints fall into the following three categories:

a) Wetlands. A number of lots have been eliminated due to the presence of freshwater wetlands. Wetlands areas and their relationship to the vacant land inventory sites are mapped in the accompanying Wetlands map. Where available, site specific information has been utilized.

b) Flood Hazard Areas. COAH regulations permit flood hazard areas as defined in N.J.A.C. 7:13 and mapped by the NJDEP to be eliminated from the developable land acreage of properties included in the vacant land inventory. If there is no state study of the flood hazard area and the flood drainage is fully developed, then the municipality may use the most recent flood insurance maps to determine the flood hazard area. Consequently, Eatontown has used FEMA Flood Insurance Rate Map data to map the flood hazard areas within the Borough. These areas are shown in the accompanying Flood Hazard Area Map. Where on-site data is available (i.e. the Weston Site), this information is shown.

c) Steep Slopes. COAH regulations allow slopes of greater than 15 percent to be excluded from the calculation of the RDP. However, if a municipality has a steep slope ordinance that allows development within steep slopes, these areas can only be excluded to the extent that they are regulated in the steep slope ordinance. The Borough of Eatontown does not have a steep slope ordinance. The Borough has taken no exclusions for steep slopes.

3. Access. Several sites have been eliminated due to inadequate access. Typically, these are land-locked lots or lots where access is constrained due to limited lot frontage or other constraints, including environmental constraints. Site 153, which is constrained by its irregular shape and shallow depth, and site F1 are located on Old Deal Road which is a single family residential cul-de-sac street. The New Jersey statewide Residential Site Improvement Standards (RSIS) limit the Average Daily Traffic (ADT) on cul-de-sac streets to 250 vehicle trips a day.[1] The *Model Subdivision and Site Plan Ordinance* upon which RSIS is based recommends a maximum ADT of 250 to 500 vehicle trips a day on a cul-de-sac street. There are already twelve single family dwellings that generate traffic onto the Old Deal Road cul-de-sac. The site of

[1] N.J.A.C. 5:21-4.1.

[2]Sound planning indicates that development should avoid disturbance of steep slopes. The issue is of such great significance that even the New Jersey State Planning Act recognizes the need to protect steep slopes (N.J.S.A 52:18A-200.a.). Consequently, steep slopes may render a site unsuitable even if a municipality lacks a steep slope ordinance. However, in compiling the vacant land inventory for Eatontown, we have followed COAH practice and removed no land on the basis of steep slopes.

the American Properties settlement on Old Deal Road (Site 154) will result in 31 additional single family units and increase the total number of single family dwellings to 43 resulting in an ADT of 439. Based on RSIS and the *Model Subdivision and Site Plan Ordinance*, sound planning limits the total number of single-family dwellings on Old Deal Road to 24 to 49 single family units.[3]

4. Association Owned Properties and Dedicated Open Space. Parcels owned by property associations as common areas, dedicated open space, or used for drainage basins and similar drainage facilities have been eliminated.

5. Approved Site Plans and Development Applications. Consistent with COAH practice, properties that have an approved subdivision or site plan have been eliminated. In addition, a number of sites have been developed and are no longer vacant.

6. Incompatible Land Uses. Sites that are adjacent to or located in areas that contain incompatible land uses (e.g. highway commercial corridors and industrial uses) have been determined to be not suitable for low and moderate income housing in accordance with the provisions of N.J.A.C. 5:93-4.2(e)6 and the definition of suitable site as set forth in N.J.A.C. 5:93-1.3, and have been eliminated from the inventory.

7. Municipal Sites. Municipally owned sites are listed in the Municipal Sites Table in Appendix C and shown in the Municipal Sites Map in Appendix D. No municipally owned sites are included in the calculation of the township's RDP. Existing municipally owned parcels include municipal offices, public safety facilities, as well as public parks, playgrounds recreation and conservation areas listed in the Borough's Green Acres Recreation and Open Space Inventory (ROSI). Lands on the ROSI account for approximately 184 acres of parks and open space areas.

a) Future Recreation Sites. Municipalities may reserve up to three (3) percent of their total "developed and developable acreage" for active municipal recreation and exclude this acreage from consideration as potential sites for low and moderate income housing and the calculation of the RDP. However, all sites designated for active recreation must be designated for recreational purposes in the municipal master plan. Developable acreage is the total vacant and undeveloped lands in the municipality minus historic and architecturally important sites, agricultural lands and environmentally sensitive lands excluded from the vacant land inventory by COAH's rules.

[3] Based on an ADT of 10.2 vehicle trips per day.

Also excluded from the calculation of total vacant and undeveloped lands are those owned by nonprofit organizations, counties and the State or Federal government that are precluded from development. Existing active municipal recreation areas are then subtracted from the three percent calculation of total developed and developable acreage to determine additional land that may be reserved for active municipal recreation.

Eatontown has a total of 3,697 acres of developed and developable lands in the Borough. Based on the calculation of developed and developable acreage, the Borough may reserve up to 111 acres of active recreation lands. Currently, the Borough has approximately 108 acres of property used for active recreation. (See Public Lands Inventory Table in Appendix C). The Borough is not proposing to reserve any additional lands for active recreation.

b) Future Conservation/Passive Recreation/Open Space. If less than three percent of a municipality's total land area is designated for conservation, parklands or open space, a municipality may reserve up to three (3) percent of its total land area for such purposes. However, the acquisition of such sites must be initiated by the municipality within one year of substantive certification or the grant of a judgment of repose by the court. If such a site is not purchased and limited to conservation, parklands or open space within that time-frame, COAH may require that the site be zoned to permit inclusionary development.

Based on a total land area of 3,789 acres, Eatontown may reserve up to 114 acres for conservation, parklands or open space. Currently, the Borough has 76 acres of publicly-owned land reserved for "conservation, parklands and open space." (See Public Lands Inventory Table in Appendix C.) The Borough may reserve up to 38 additional acres for open space purposes.

Eatontown has begun the process of acquiring sites F-3 and F-4 (Block 94, Lot 2 and Block 99, Lot 2), commonly known as the Stella Rose farm for open space purposes. Together, these sites contain a total of 11.29 acres. Consequently, the Borough has eliminated these sites and acreage from the calculation of the Borough's RDP. A portion of these sites are also constrained by wetlands.

In addition, the Borough intends to reserve site P-34, a 2.64-acre triangular shaped parcel located at the end of Fieldstone Court as open space. Combined with the Stella Rose farm, the Borough intends to

reserve approximately 14 acres for open space purposes, and exclude this acreage from the calculation of the RDP. Based on COAH's formula, the Borough may reserve an additional 24 acres of open space.

RDP CALCULATION

The sites that have been included in the calculation of the Borough's RDP are listed in the Summary Table located at the end of Appendix A and identified on the Vacant Land Inventory Map in Appendix B. A description of each of these sites is in the following section of this report.

A planning analysis was undertaken for each site to determine the appropriate density and setaside in accordance with COAH's vacant land adjustment procedures. This analysis included a review of the size and shape of the parcel; the type, intensity and location of surrounding land uses; the location and configuration of environmental constraints impacting the site; access; topography; and other relevant planning issues. Based on this analysis, a density of 6.0 units per acre and 20 percent setaside was applied to the net developable acreage of each of the sites in accordance with COAH's criteria. The one exception is Site #154 (a.k.a. American Properties site), which is the subject of a settlement agreement. In the case of this site, the density and setaside specified in the settlement agreement was utilized.

Applying the densities and setasides to the parcels in the Summary Table, the Borough of Eatontown's RDP is 161 units.

SITES CONTRIBUTING TO THE RDP

Site #64 (Block 82, Lot 10 and Block 92.13 Lot 19)

Site #64 consists of two lots owned by the Old Orchard Country Club. The larger of the two lots contains an existing 18-hole golf course. The site's primary frontage is along Route 36, although access to the site from Route 36 may be constrained due to the location of wetlands in this area of the site. The development potential of the site is further constrained by the Turtle Mill Brook, which runs through the central portion of the site. An area of wetlands is associated with this brook. While no flood hazard areas have been delineated along the Turtle Mill Brook, some flooding occurs in this area during periods of heavy rain. These are also identified by NJDEP as potential "floodprone" areas. (See accompanying aerial/GIS map) Consequently, further on-site investigation may be necessary to determine the actual location of any flood hazard area. If on-site data becomes available, additional portions of the site may be eliminated. The site is in the R-32 Residence Zone.

Land uses surrounding the site include single-family residential development to the north of the site. A multi-family residential development (Brookwood) is located to the west of the site. Brookwood is zoned for six (6) units per acre, but is actually developed at approximately five (5) units per acre. The New Jersey Division of Motor Vehicles inspection station and regional offices are located to the southwest on Route 36. To the east is a golf driving range and other retail commercial uses located along Route 36 in West Long Branch. Retail commercial uses are also located across Route 36 from the site in West Long Branch.

While technically the site is not vacant, it is included in the vacant land inventory pursuant to N.J.A.C. 5:93-4.2(d), which provides for the inclusion of sites with relatively low densities, such as golf courses not owned by their members, as part of the calculation of the RDP. Based on a review of the uses surrounding the site and the densities of adjacent residential development, a density of six (6) units per acre with a 20 percent setaside has been applied to the site, for an RDP of 120 units.

Site #85 (Block 92, Lot 20)

Site #85 is a 10-acre parcel owned by an adjacent automobile dealership. The site has frontage on both Route 36 and Marin Way. The lot is somewhat triangular-shaped, with primary frontage along Marin Way. The site contains several areas of mapped wetlands. (See Wetlands Map.) The site is in the M-B Manufacturing Business Zone.

Surrounding land uses include the Brookwood multi-family townhouse development to the north and west, the automobile dealership to the east, and retail commercial uses, including the Monmouth Mall to the east and south along Route 36. A substantial setback would be required to provide adequate buffering and screening of these uses. Given the location of the adjacent commercial uses along the Route 36 corridor, the triangular configuration of the lot, and the location of wetlands, any residential development would have to be located in the northern portion of the site.

Based on a review of the uses surrounding the site, the densities of adjacent residential development, wetland location, and site configuration, a density of six (6) units per acre with a 20 percent setaside has been applied to the site, for an RDP of 10 units.

Site #109 (Block 101, Lots 7 & 8)

Site #109 is a triangular parcel containing approximately nine (9) acres. The site maintains frontage on Route 36 and Wyckoff Road. The site contains approximately four (4) acres of wetlands in the western end of the site. The site is in the R-20 Residence Zone. The site is currently the subject of a use variance application for a self-storage facility.

Land uses surrounding the site include single-family detached residential to the south of the site. The Monmouth Mall is located to the east across Wyckoff Road. To the north, across Route 36 is the Laurel Gardens multi-family residential development.

Based on a review of the uses surrounding the site, its triangular configuration, wetlands constraints, and the densities of adjacent residential development, a density of six (6) units per acre with a 20 percent setaside has been applied to the net acreage of 4.8 acres on the site, for an RDP of six (6) units.

Site #113 (Block 104, Lot 11.02 and Block 105, Lot 10)

Site #113 consists of two parcels that create a tract that has frontage on both Parker Road and Route 36. Lot 10 in Block 105 contains 3.29 acres and fronts on Highway 36. Lot 11.02 in Block 104 contains 6.61 acres and fronts on Parker Road. Combined, the tract contains a total 9.9 acres, including approximately one acre of wetlands in the northern portion of the tract on Lot 10. Both parcels are in the M-B Manufacturing Business Zone.

Surrounding land uses include adjacent automobile dealerships and highway commercial uses along Route 36, single family residential uses located on the south side of Parker Road, and the New Jersey Division of Motor Vehicles offices across Route 36 to the north. Parker Village, a 61-unit “active adult” multi-family residential development is located to the east of the site on Parker Road.

Given its location and frontage along the Route 36 corridor, Lot 10 in Block 105 is significantly impacted by the adjacent automobile dealerships along Route 36. It is also significantly constrained by mapped wetlands. Consequently, this portion of Site #113 has been eliminated from the calculation of the RDP due to incompatible land uses.

Based on a review of the uses surrounding the site and the densities of adjacent residential development, a density of six (6) units per acre with a 20 percent setaside has been applied to the 6.61 acres on Lot 11.02 in Block 104, for an RDP of eight (8) units.

Site #116 (Block 107, Lot 4)

Site #116 is located on the south side of Parker Road in the eastern portion of the Borough near its border with West Long Branch. The site contains 4.77 acres and has an irregular shape. It is located in the R-20 Residence Zone. The site is currently the subject of an application for an eight lot single-family residential subdivision.

The site is surrounded on three sides by the municipally owned 80-acre park. Single-family detached residential development is located to the east in West Long Branch and , farther to the west of the site along the south side of Parker Road. The municipal recycling facility is also located on the south side of Parker Road to the west of the site. To the north of the site across Parker Road is the Parker Village active adult residential development and highway commercial uses fronting on Route 36.

Based on a review of the uses surrounding the site and the densities of adjacent residential development, a density of six (6) units per acre with a 20 percent setaside has been applied to the 4.77 acres on the site, for an RDP of six (6) units.

Site #126 (Block 113, Lots 27.01 & 28)

Site #126 is located at the corner of Wall Street and Industrial Road East. The site contains 4.42 acres and has an irregular shape. The site has recently been rezoned to permit senior citizen residential development. An application has been submitted for a 21-unit age restricted residential development.

Surrounding land uses include light industrial uses and office uses along Industrial Way East, single family detached residential across Wall Street, and a municipal park.

Based on a review of the uses surrounding the site and the densities of adjacent residential development, a density of six (6) units per acre with a 20 percent setaside has been applied to the 4.42 acres on the site, for an RDP of five (5) units.

Site #154 (Block 135, Lot 3 and Block 136.01, Lot 1)

Site #154 (a.k.a. the American Properties site) is located on Old Deal Road in the southeastern portion of the Township. The site contains 9.77 acres and has an irregular shape. Pursuant to the court-approved settlement agreement, the site will be developed with 31 single-family detached dwellings at approximately 3.2 units per acre. The developer is providing the Borough with a contribution equivalent to a 20 percent affordable setaside. In calculating the RDP, the Borough incorporates the settlement agreement. Consequently, an RDP of six (6) units has been applied to this site.

REHABILITATION COMPONENT

The Borough's vacant land adjustment does not impact its current rehabilitation component of 27 units (29-unit indigenous need minus two (2) units of spontaneous rehabilitation). The Borough's rehabilitation component is being addressed through the Monmouth County Housing Improvement Program. This is discussed in the section of the Housing Element and Fair Share Plan that addresses credits and reductions.

UNMET NEED

Pursuant to N.J.A.C. 3:93-4.2(h), a municipality receiving a vacant land adjustment must capture opportunities for the provision of affordable housing as new development or redevelopment occurs in the community, or what COAH commonly categorizes as the "unmet need." Methods suggested in COAH's regulations to meet this need include the use of accessory apartment ordinance, overlay zoning districts, or a mandatory development fee ordinance. A municipality may use one or a combination of these approaches to capture opportunities for affordable housing in accordance with COAH's requirements. The Borough has chosen the following approach:

1. Excess Credits. The Borough will meet a portion of its unmet need through excess credits generated as part of its overall fair share plan and prior eligible housing activities. The documentation in support of these credits is provided in a separate report.

2. Mandatory Development Fee Ordinance. Eatontown adopted a mandatory development fee ordinance in 2000. This ordinance was approved by the Court.

3. Overlay District. The Borough will place an overlay district on Howard Commons at Fort Monmouth. Fort Monmouth has announced that a total of 486 units of fully rehabilitated military housing in Howard Commons on Pine Brook Road are excess and will be transferred out of the Fort Monmouth housing inventory. The dwelling contain two, three, and four bedrooms. The 270 units north of Pine Brook Road were declared excess in 2000. The 216 units south of Pine Brook Road are expected to be available by 2005. Of the 486 units, 370 units have been vacant for the last 24 months. Eatontown, with funding from the New Jersey Department of Community Affairs, has retained a consultant to prepare a plan for the future use and development of the excess Fort Monmouth properties. As part of the plan for Howard Commons, the Borough will place an overlay district on the tract and require a 20% affordable housing setaside on all residential units that become available. In accordance with COAH regulations at N.J.A.C. 5:93-5.10(b), the Howard Commons units could be considered as new units that provide credits against the Borough's RDP. However, the credits from other affordable developments in the Borough that are subject to affordability controls and that have been constructed and occupied already exceed the RDP. Consequently, it is appropriate to view Howard Commons as a residential redevelopment site that will capture unmet need.

4. Senior Citizen Housing. The Borough will increase the permitted density of the RSCS zone to permit the Eatontown Senior Citizen Housing Corporation to construct additional affordable age-restricted units at the Meadowbrook senior citizen complex. The Borough will be able to obtain credit for these units up to its senior citizen cap. Based on the RDP of 161 units, the maximum number of age-restricted units that the Borough can include in its plan is 32 units. As per NJAC 5:93-5.14(a)2, Eatontown's cap on age restricted units is .25(RDP - the rehab component - rehab credits) - any senior units credited from the first round. For Eatontown, this is .25(161 - 27 -5) = 32.25 or 32 units.

SUMMARY AND CONCLUSION

The vacant land analysis reveals that the Borough of Eatontown does not have sufficient acreage to accommodate its 503-unit new construction obligation. After following the procedures for undertaking a vacant land adjustment analysis described in COAH's regulations, it has been determined that approximately 139 acres of net developable land exist in the Borough. This includes 38.5 acres of vacant and developable land, and 100.4 acres of land associated with the Old Orchard Country Club golf course, which has been determined to be underutilized but potentially suitable for development in accordance with COAH's standards.

With the exception of the American Properties settlement site, a density of six units per acre and a 20 percent setaside has been used to calculate the township's RDP from these sites. The density and setaside contained in the settlement agreement have been used to calculate the RDP for the American Properties site. Based on these densities and setasides, the Borough of Eatontown has an RDP of 161 units. In addition, the Borough has a 27-unit rehabilitation obligation.

APPENDIX A

Vacant Land Inventory Table

APPENDIX B

Vacant Land Inventory Maps

VACANT LAND INVENTORY 2002

BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification							Area Exclusions as per N.J.A.C. 5:93-4.2(e)						
							Environmentally Sensitive						
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Owner	Site Area (acres)	Wet Areas *Sec. 4.2(e)2*	Floodplain *Sec. 4.2(e)2*	Steep Slopes *Sec. 4.2(e)2*	Conserv. & Open Space *Sec.4.2(e)5*	Remaining Area	Exclusion Codes & Remarks	Net Developable Acres
1	4.01	1	10	233 Tinton Ave.	Zaorski, Agnes	0.54	0.00	0.00	0.00	0.00	0.54	Less than 0.8 acre	0.00
2	4.01	1	12	Dogwood Drive	Tinton Woods Homeowners Assoc. Inc.	8.22	4.57	0.59	0.00	0.00	3.07	Homeowners Assoc./OS	0.00
3	4.01	1.01	1	Redwood Drive	Tinton Woods Homeowners Assoc. Inc.	10.76	7.08	2.98	0.00	0.00	0.70	Homeowners Assoc./OS	0.00
4	4.01	1.02	1	Oak Lane	Tinton Woods Homeowners Assoc. Inc.	1.10	0.41	0.18	0.00	0.00	0.51	Homeowners Assoc./OS	0.00
5	4.01	1.03	1	Oak Lane	Tinton Woods Homeowners Assoc. Inc.	2.70	0.00	0.00	0.00	0.00	2.70	Homeowners Assoc./OS	0.00
6	4.01	1.04	1	Oak Lane	Tinton Woods Homeowners Assoc. Inc.	1.00	0.00	0.00	0.00	0.00	1.00	Homeowners Assoc./OS	0.00
7	4.01	1.06	1	Redwood Drive	Tinton Woods Homeowners Assoc. Inc.	1.97	0.00	0.00	0.00	0.00	1.97	Homeowners Assoc./OS	0.00
8	5	4	14	Taylor Place	Newton, Randall && Dickie	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
9	5	4	15	Taylor Place	Sondhi, Kiran & Ratan	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
10	5	4	16	Taylor Place	Tucker, Charles Jr.	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
11	5	4	17	Taylor Place	Albert, Harold & Gloria	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
12	5	4	18	Taylor Place	Arnold, Gary & Reilly, Genevieve	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
13	5	4	19	Taylor Place	Reed, Ronald & Betty	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
14	5	4	20	Taylor Place	Clark, Sherman L. Jr. & Shirley	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
15	5	5	1	Taylor Place	Taylor, Geraldine & Edward	0.08	0.00	0.00	0.00	0.00	0.08	Less than 0.8 acre	0.00
16	5	5	12	Mill Street	Jenks, Timothy & Gina Marie	0.11	0.11	0.00	0.00	0.00	0.00	Less than 0.8 acre	0.00
17	5	5	14	Mill Street	Johnson, William	0.11	0.02	0.00	0.00	0.00	0.09	Less than 0.8 acre	0.00
18	5	6	4	Mill Street	Jarvis, George & Sheryl Lynn	0.23	0.23	0.00	0.00	0.00	0.00	Less than 0.8 acre	0.00
19	5	6	7	Maxwell Road	Johnson, William C.	0.17	0.16	0.00	0.00	0.00	0.01	Less than 0.8 acre	0.00
20	5	11	2	Maxwell Road	JCP&L Co. Real Estate Dept.	0.76	0.76	0.00	0.00	0.00	0.00	Less than 0.8 acre	0.00
21	8	11.02	2	Maxwell Road	UNKNOWN	0.45	0.00	0.00	0.00	0.00	0.45	Less than 0.8 acre	0.00
22	5	12	21	Lewis Street	Boral, James & Chasey, Arthur	0.15	0.00	0.00	0.00	0.00	0.15	Less than 0.8 acre	0.00
23	5	12	22	Lewis Street	Corcione Construction Co.	0.15	0.00	0.00	0.00	0.00	0.15	Less than 0.8 acre	0.00
24	5	12	23, 24	Lewis Street	Smock, Edward	0.26	0.02	0.00	0.00	0.00	0.24	Less than 0.8 acre	0.00
25	5	13	10	23 Throckmorth Ave.	Huntting, William E. & Nancy	0.18	0.00	0.00	0.00	0.00	0.18	Less than 0.8 acre	0.00
26	5	13	17	Throckmorth Ave.	Husselman, John	0.35	0.03	0.00	0.00	0.00	0.32	Less than 0.8 acre	0.00
27	5	14	10	Throckmorth Ave.	Nappen Family Trust	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
28	6	16	15	Throckmorth Ave.	JCP&L Co. Real Estate Dept.	1.17	0.11	0.17	0.00	0.00	0.89	Less than 0.8 acre	0.00
29	7	23	9-13	61 Villa Place	Christensen, Carl & Patricia	0.27	0.00	0.00	0.00	0.00	0.27	Less than 0.8 acre	0.00
30	7	23	14	61 Villa Place	Christensen, Carl & Patricia	0.86	0.00	0.00	0.00	0.00	0.86	Less than 0.8 acre	0.00
31	7	27	14	37 Park Avenue	Royh, Ray D. & Seena F.	0.14	0.00	0.00	0.00	0.00	0.14	Less than 0.8 acre	0.00
32	7	31	8	Park Avenue	Forgach, Peter & Patricia	0.21	0.00	0.00	0.00	0.00	0.21	Less than 0.8 acre	0.00
33	7	33	22	Watson Place	Schlitsey, Paul & Laurette	0.07	0.00	0.00	0.00	0.00	0.07	Less than 0.8 acre	0.00
34	6	35	1.03	Highway 35	Lenhow Estates, Inc.	1.70	1.65	0.00	0.00	0.00	0.05	Approved site plan	0.00
35	5	35	4, 5	14-16 Broad Street	RMJ Real Estate, LLC	0.29	0.00	0.00	0.00	0.00	0.29	Less than 0.8 acre	0.00
36	6	35	9	Rear Broad Street	Daley, Angela	0.49	0.37	0.00	0.00	0.00	0.12	Approved site plan	0.00
37	6	35	11	Broad Street	Squillare Family Trust	0.18	0.13	0.00	0.00	0.00	0.05	Less than 0.8 acre	0.00
38	8	54	3	Lewis Street	Nannini, James	2.23	0.24	0.00	0.00	0.00	1.99	Construction Yard	0.00
39	9	54	5, 6, 7	Pinebrook Road	Nannini, Mary	1.35	0.12	0.00	0.00	0.00	1.23	Construction Yard	0.00
40	12	54	8.02	Pinebrook Road	J & A Properties of NJ, LLC	18.10	14.69	0.00	0.00	0.00	3.41	Wetlands, Railroad Yard	0.00
41	9	55	11	Maple Ave. & Lewis	JRF Associates, LLC	1.25	0.99	0.00	0.00	0.00	0.26	Less than 0.8 acre	0.00
42	9	55	18	Maple Avenue	Ceballos, Thomas J.	0.04	0.00	0.00	0.00	0.00	0.04	Less than 0.8 acre	0.00
43	9	55	18.01	120 Maple Avenue	Dowen, Charles & Charlotte	0.02	0.00	0.00	0.00	0.00	0.02	Less than 0.8 acre	0.00
44	9	56	11.01	High Street	Fields, Gregory & Daphne	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
45	9	56	12.03	High Street	Corcione Construction Co.	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00

VACANT LAND INVENTORY 2002

BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification							Area Exclusions as per N.J.A.C. 5:93-4.2(e)						Net Developable Acres
							Environmentally Sensitive						
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Owner	Site Area (acres)	Wet Areas *Sec. 4.2(e)2*	Floodplain *Sec. 4.2(e)2*	Steep Slopes *Sec. 4.2(e)2*	Conserv. & Open Space *Sec.4.2(e)5*	Remaining Area	Exclusion Codes & Remarks	
46	9	57	34	South Street	Thetford, Norman D & Meda	0.16	0.00	0.00	0.00	0.00	0.16	Less than 0.8 acre	0.00
47	9	60	15 & 16	29 Buttonwood Ave.	Londo, Dorothy M.	0.54	0.00	0.00	0.00	0.00	0.54	Less than 0.8 acre	0.00
48	9	61	3	Grant Avenue	Wood, Alma	0.49	0.00	0.00	0.00	0.00	0.49	Residential Subdivision	0.00
49	9	61	4	Alexandria Court	MMC Development, LLC	2.09	0.00	0.00	0.00	0.00	2.09	Residential Subdivision	0.00
50	9	61	9	42 Buttonwood Ave.	McMillian, Michael & Catherine	0.25	0.00	0.00	0.00	0.00	0.25	Less than 0.8 acre	0.00
51	14	64	3	136 Highway 35	136 Eaton Associates	4.00	0.42	0.00	0.00	0.00	3.58	Incompatible land uses	0.00
52	9	64	7	Highway 35	Outdoor Systems, Inc.	0.32	0.00	0.00	0.00	0.00	0.32	Less than 0.8 acre	0.00
53	9	64	8	Highway 35	R.K. and K.S. Realty, LLC	0.23	0.00	0.00	0.00	0.00	0.23	Less than 0.8 acre	0.00
54	9	64	26	South Street	The Bendix Corporation	0.22	0.11	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
55	9	64	26.02, 26.03, 26.04	South Street	Chasey, Arthur Jr.	2.94	0.49	0.00	0.00	0.00	2.45	Constrained (flood plain)	0.00
56	13	64	32	375 South St.	Goose Properties, LLC	2.04	1.54	0.00	0.00	0.00	0.50	Approved site plan	0.00
57	10	66	21.01	23 Kramer Avenue	Hoffman, Lisa N.	0.68	0.00	0.00	0.00	0.00	0.68	No Access	0.00
58	9	66.01	23	Hwy. 35 Rear	Muzetska, Joseph & Barbara	0.24	0.23	0.00	0.00	0.00	0.01	Less than 0.8 acre	0.00
59	10	69	22.02	Hwy. 35 Rear	UNKNOWN	0.12	0.00	0.00	0.00	0.00	0.12	No Access	0.00
60	10	69	33, 33.01	Conifer Crest/ Beverly Ave.	R.J. Grasso Jr., Inc.	1.97	1.59	0.00	0.00	0.00	0.38	Approved subdivision	0.00
61	14	69	34	125 Highway 35	Monmouth Plaza Enterprises, LLC	1.02	0.05	0.00	0.00	0.00	0.97	Part of Shopping Center	0.00
62	10	72	3	90 Wyckoff Road	Gifford, Frank & Marilyn	0.34	0.00	0.00	0.00	0.00	0.34	No Access	0.00
63	11	82	3.01	Monmouth Road	Long Branch County Club	0.34	0.00	0.00	0.00	0.00	0.34	No Access	0.00
64	15	82/92.13	10/19	Route 36	Old Orchard Country Club Associates	106.56	4.60	1.59	0.00	0.00	100.37	none	100.37
65	13	83	8	Ryers Place	Hamilton, Elijah & Viola	0.14	0.00	0.00	0.00	0.00	0.14	Developed (single family home)	0.00
66	13	83	10	Grant Avenue	Jones, Dana & Mary Margaret	0.07	0.00	0.00	0.00	0.00	0.07	Less than 0.8 acre	0.00
67	13	84	2	Grant Avenue	Nash, Mary & Bhola, Durwantie	0.04	0.00	0.00	0.00	0.00	0.04	Less than 0.8 acre	0.00
68	13	84	4	Grant Avenue	Eatontown Associates	0.07	0.00	0.00	0.00	0.00	0.07	Less than 0.8 acre	0.00
69	13	84	5	Grant Avenue	Eatontown Associates	0.11	0.00	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
70	13	84	6	Grant Avenue	Eatontown Associates	0.03	0.00	0.00	0.00	0.00	0.03	Less than 0.8 acre	0.00
71	13	84	8	Grant Avenue	Taylor, Sherman	0.20	0.00	0.00	0.00	0.00	0.20	Less than 0.8 acre	0.00
72	13	84	11	Grant Avenue	UNKNOWN, c/o H. Morris	0.17	0.13	0.00	0.00	0.00	0.04	Less than 0.8 acre	0.00
73	13	84	12	Grant Avenue	Shewmake, James	0.17	0.02	0.00	0.00	0.00	0.16	Less than 0.8 acre	0.00
74	13	84	13	Grant Avenue	Taylor, Ella c/o Wm. Morris	0.17	0.10	0.00	0.00	0.00	0.07	Less than 0.8 acre	0.00
75	13	84	14 -17	Grant Avenue	Shewmake, James	0.22	0.12	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
76	13	84	18	Grant Avenue	Taylor, Elwood & Lottie E.	0.10	0.04	0.00	0.00	0.00	0.06	Less than 0.8 acre	0.00
77	13	84	33, 34	Victor Place	UNKNOWN, c/o Edward Smock	0.28	0.00	0.00	0.00	0.00	0.28	Less than 0.8 acre	0.00
78	13	84	39	Victor Place	Honeycutt, Donald & Joann	0.15	0.00	0.00	0.00	0.00	0.15	Less than 0.8 acre	0.00
79	13	84	50.02	Richardson Avenue	UNKNOWN	0.05	0.00	0.00	0.00	0.00	0.05	Less than 0.8 acre	0.00
80	13	84	62	Church Street	Grompone, Marie	0.09	0.00	0.00	0.00	0.00	0.09	Less than 0.8 acre	0.00
81	13	84	66	Church Street	Sharma, Kanwal & Samriti	0.18	0.00	0.00	0.00	0.00	0.18	Less than 0.8 acre	0.00
82	13	87	3	Laurel Place	Commerce Bank/Shore N.A.	0.13	0.04	0.00	0.00	0.00	0.09	Developed (Bank)	0.00
83	13	87	4	Wyckoff Road	Commerce Bank/Shore N.A.	0.87	0.21	0.00	0.00	0.00	0.66	Developed (Bank)	0.00
84	13	87.01	1.41	Ginger Court	Whalepond Development, L.P.	7.97	4.81	0.00	0.00	0.00	3.16	Parking lot for condominiums	0.00
85	14	92	20	Highway 36	John Schmelz Properties	10.00	1.91	0.00	0.00	0.00	8.09	Vehicle storage (car dealership)	10.00
86	14	92.01	12.01, 12.02	Brookwood Drive	Ziv Associates, LLC	0.42	0.00	0.10	0.00	0.00	0.32	Shape/Less than 0.8 acre	0.00
87	14	92.04	53	Malibu Drive	Brookwood Homeowners Assoc.	3.61	2.68	0.40	0.00	0.00	0.53	Homeowners Assoc./OS	0.00
88	14	92.05	39	Malibu Drive	Brookwood Homeowners Assoc.	2.98	2.89	0.02	0.00	0.00	0.07	Homeowners Assoc./OS	0.00
89	14	92.06	13	Brookwood Drive	Brookwood Homeowners Assoc.	0.50	0.00	0.19	0.00	0.00	0.31	Homeowners Assoc.	0.00

VACANT LAND INVENTORY 2002

BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification							Area Exclusions as per N.J.A.C. 5:93-4.2(e)						
							Environmentally Sensitive						
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Owner	Site Area (acres)	Wet Areas *Sec. 4.2(e)2*	Floodplain *Sec. 4.2(e)2*	Steep Slopes *Sec. 4.2(e)2*	Conserv. & Open Space *Sec.4.2(e)5*	Remaining Area	Exclusion Codes & Remarks	Net Developable Acres
90	14	92.07	23 & 24	Brookwood Drive	Brookwood Homeowners Assoc.	1.20	0.00	0.00	0.00	0.00	1.20	Homeowners Assoc.	0.00
91	14	92.08	23	Brookwood Drive	Brookwood Homeowners Assoc.	1.04	0.00	0.00	0.00	0.00	1.04	Homeowners Assoc.	0.00
92	14	92.08	34	Brookwood Drive	Brookwood Homeowners Assoc.	1.60	0.00	0.00	0.00	0.00	1.60	Homeowners Assoc.	0.00
93	14	92.09	33	Route 36	Brookwood Homeowners Assoc.	1.00	0.00	0.00	0.00	0.00	1.00	Homeowners Assoc.	0.00
94	14	92.11	33	Malibu Drive	Brookwood Homeowners Assoc.	0.08	0.00	0.00	0.00	0.00	0.08	Homeowners Assoc.	0.00
95	14	92.12	33	Malibu Drive	Brookwood Homeowners Assoc.	2.78	0.57	0.49	0.00	0.00	1.72	Homeowners Assoc.	0.00
96	10	92.13	18	Reynolds Drive	Scavone, Michael & Marjorie	1.59	0.00	0.00	0.00	0.00	1.59	Developed (single family home)	0.00
97	25	93	9 & 10	Wyckoff Road	Ruiz, Antonia c/o Morris, W. H.	0.18	0.07	0.04	0.00	0.00	0.07	Less than 0.8 acre	0.00
98	25	93	11-19	Wyckoff Road	Brazee, Cheryl a.	0.18	0.09	0.02	0.00	0.00	0.08	Less than 0.8 acre	0.00
99	16	93	30.12	Hope Road	Philipbosian, George Et Als	8.10	0.00	0.00	0.00	0.00	8.10	No Access	0.00
100 (NF)	16	93	31	Hope Road Rear	UNKNOWN	0.11	0.00	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
101	20	93	30.08	Hope Road	95 Hope Road, LLC	1.55	1.55	0.00	0.00	0.00	0.00	Wetlands	0.00
102	20	93	30.17	Hope Road	95 Hope Road, LLC	0.97	0.97	0.00	0.00	0.00	0.00	Wetlands	0.00
103	20	93.05	1	Kingsley Court	Deepwood Estates Assoc. Inc.	0.92	0.69	0.00	0.00	0.00	0.23	Developed (single family home)	0.00
104	16	93.06	21	Notingham Drive	Deepwood Estates Assoc. Inc.	3.70	3.69	0.00	0.00	0.00	0.01	Drainage Basin	0.00
105	16	93.06	29.01	Highway 36	Deepwood Estates Assoc. Inc.	1.50	0.96	0.07	0.00	0.00	0.47	Less than 0.8 acre	0.00
106	13	94	1	147 Grant Ave.	Howard, Delores C.	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
107	17	94	4	Grant Avenue	Sodowick, George & Elizabeth	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
108	17	98	12	Emma & Turner	Hayter, William & Olga	1.50	0.98	0.00	0.00	0.00	0.52	No Access	0.00
109	17	101	7 & 8	Wyckoff Road	Ocean Ventures	8.99	4.08	0.11	0.00	0.00	4.80	none	4.91
110	22	102	4	Highway 35 rear	35 Land Associates, LLC	3.60	3.28	0.00	0.00	0.00	0.32	Wetlands, No Access	0.00
111	21	102.01	4	Windsor Drive	JBL Enterprises	1.27	0.00	0.00	0.00	0.00	1.27	Drainage Basin	0.00
112	18	103	10	Highway 35	LGR Associates. Toys R Us	0.59	0.00	0.00	0.00	0.00	0.59	Parking lot	0.00
113	19	104/ 105	11.02/ 10	Parker Road	DCH Investments, Inc.	9.91	1.00	0.00	0.00	0.00	8.91	Lot 10 not suitable (incompatible land uses & wetlands)	6.81
114	15	105	8.01	Highway 36	RB-3 Associates Et Als	0.32	0.32	0.00	0.00	0.00	0.00	Home Depot driveway	0.00
115	19	107	3	Parker Road	Marangi, Dorothy	0.01	0.00	0.00	0.00	0.00	0.01	Less than 0.8 acre	0.00
116	19	107	4	Parker Road	Kahn, Walter & Susan	4.77	0.00	0.00	0.00	0.00	4.77	none	4.77
117	22	110	14-17	246 Highway 35	Etel Associates	0.80	0.00	0.00	0.00	0.00	0.80	Incompatible Land Use	0.00
118	22	110	18-19	230 Highway 35	Scialfa, Joseph	0.92	0.00	0.00	0.00	0.00	0.92	Incompatible Land Use	0.00
119	22	110	22-24	230 Highway 35	Scialfa, Joseph	1.05	0.00	0.00	0.00	0.00	1.05	Parking lot	0.00
120	22	111	37, 38	14 Eaton Road	Eaton Holdings, LLC	3.01	0.00	0.00	0.00	0.00	3.01	Developed (office building)	0.00
121	27	111	45.01	Meridian Way	550 Realty Corp.	4.00	0.00	0.00	0.00	0.00	4.00	Subdivision, Incomp. Land Uses	0.00
122	26	111	52.02	Industrial Way West	Townsend Property Trust LP	7.99	0.00	0.00	0.00	0.00	7.99	Developed (office building)	0.00
123	22	112	8-10	Eaton Road	Wobito, Rudy & Constance Et Al	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
124	22	112	11, 12 & 13	Highway 35	Eatontown Management Corp.	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
125	22	113	16-20	Highway 35	Eatontown Management Corp.	0.71	0.00	0.00	0.00	0.00	0.71	Less than 0.8 acre	0.00
126	23	113	27.01, 28	Wall Street	Tormee Company	4.42	0.00	0.00	0.00	0.00	4.42	none	4.42
127	22	114	2, 3, 5, & 6	Highway 35	ACS Assoc. 11 c/o Francis Bonello	9.61	0.00	0.00	0.00	0.00	9.61	Industrial Park - Incompatible land uses. A portion of site to be used for new road.	0.00
128	23	114	15.02	Industrial Way East	UNKNOWN	0.00	0.00	0.00	0.00	0.00	0.00	industrial Park	0.00
129	23	116.04	1	Wall Street	Rozbern Estates Assoc. Inc., L. Wilf	1.14	0.00	0.00	0.00	0.00	1.14	Drainage Basin	0.00
130	23	117	9	Wall Street	Antonelli, Angelina	0.24	0.00	0.00	0.00	0.00	0.24	Less than 1 acre/SF Dev. NC	0.00
131	23	117	10	Wall Street	Vuocolo, Tosca F.	0.12	0.00	0.00	0.00	0.00	0.12	Less than 1 acre/SF Dev. NC	0.00

VACANT LAND INVENTORY 2002

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132	23	117	11	412 Wall Street	Smith, Robert & Sally	0.20	0.00	0.00	0.00	0.00	0.20	Less than 0.8 acre	0.00
133	28	117	19.04	Old Deal Road	Canonico, Carmine & Elizabeth	0.66	0.00	0.00	0.00	0.00	0.66	Less than 1 acre/SF Dev. NC	0.00
134	24	118.03	13	Georgetown Drive	MBS Partners	0.40	0.00	0.00	0.00	0.00	0.40	Less than 0.8 acre	0.00
135	24	118.04	7.01	Wall Street Rear	MBS Partners	3.43	0.00	0.00	0.00	0.00	3.43	No Access	0.00
136	25	121	7, 8, 9	Paul Avenue	DiDonato, Anthony & Carolyn	0.43	0.00	0.00	0.00	0.00	0.43	Less than 0.8 acre	0.00
137	25	123	1	Cortland & Knox	Ciok, Robert & Peggy	0.11	0.00	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
138	25	123	39	Paul Avenue	Barone, Dolores M c/o Fontana	0.11	0.00	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
139	25	125.01	2	Wyckoff Road	Simon, Betty (Trustee)	1.97	0.39	0.00	0.00	0.00	1.58	Incompatible Land Use	0.00
140	25	125.01	8.01	Shark River Road	Romanowski, J & Lubcke, M.	0.10	0.00	0.00	0.00	0.00	0.10	Less than 0.8 acre	0.00
141	25	126	21 & 22	Paul Avenue	Mearizo, Susan	0.11	0.00	0.00	0.00	0.00	0.11	Less than 0.8 acre	0.00
142	25	127	22, 23 & 24	Shark River Road	Wills, Marianne	0.25	0.00	0.00	0.00	0.00	0.25	Less than 0.8 acre	0.00
143	25	127	36, 37 & 38	Shark River Road	Casteel, Franklin & Lorraine	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
144	26	131	14 & 15	96 Hilbert Parkway	Lister, Michael & Dieu	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
145	30	133	2	Shark River Road	Wolf, William	0.34	0.00	0.00	0.00	0.00	0.34	Less than 0.8 acre	0.00
146	30	133	5	Industrial Way West	UNKNOWN	0.71	0.00	0.00	0.00	0.00	0.71	Less than 0.8 acre	0.00
147	27.01	134	1	Industrial Way West	Donato, John Jr.	1.78	0.96	0.16	0.00	0.00	0.66	Drainage Basin	0.00
148	27.01	134	6.10	Corbett Way	Corbett Holdings, LLC	1.42	0.64	0.32	0.00	0.00	0.45	Less than 0.8 acre	0.00
149	27.01	134	6.12	Corbett Way	80 Corbett Way, LLC	5.49	0.73	0.00	0.00	0.00	4.76	Developed	0.00
150	27.01	134	6.13	James Way	Benchmark Associates, LLC	1.50	0.00	0.00	0.00	0.00	1.50	Incompatible Land Use	0.00
151	27.01	134	6.15, 6.16, 6.17	James Way	John Donato, Jr., c/o Midlantic	4.22	0.59	0.31	0.00	0.00	3.33	Approved application	0.00
152	27.01	134	6.22, 6.23, 6.24	Corbett Way/ James Way	John Donato, Jr., c/o Midlantic	3.74	0.00	0.00	0.00	0.00	3.74	Incompatible Land Use	0.00
153	28	135	2	Old Deal Road	Lubrano, Robert	2.32	0.00	0.00	0.00	0.00	2.32	Irregular lot shape/ Shallow lot depth/ Inadequate Access/ Cul-de-sac	0.00
154	28	135/136.01	3/1	Old Deal Road	Hain Family Limited Partnership	9.77	0.00	0.00	0.00	0.00	9.77	Court Approved Settlement	9.77
155	28	135	6.05	Industrial Way West	550 Realty Corp	7.05	3.41	1.58	0.00	0.00	2.06	Approved site plan	0.00
156	28	135	6.11	Christopher Way	Donato Hi-Tech Holdings LLC	6.60	0.00	0.00	0.00	0.00	6.60	Developed (office building)	0.00
157	28	135.01	6.021	Highway 35 & Ind. Way E.	Laurel Assoc. c/o Genesis Health	3.81	1.74	0.00	0.00	0.00	2.07	Incompatible Land Use. Wetlands constraints.	0
158	28	136.02	2	Old Deal Road	Wartmann, Neil & Traversa	1.00	0.00	0.00	0.00	0.00	1.00	Developed (single family home)	0.00
159	26	146	27	Rear Grant Avenue	Westwood Oaks, Inc.	3.43	0.00	0.00	0.00	0.00	3.43	Drainage Basin	0.00
160	22	147	29	Grant Avenue	Muzetska, Joseph & Barbara	0.17	0.00	0.00	0.00	0.00	0.17	Less than 0.8 acre	0.00
161	21	147	48	Rear Weston Place	Westwood Oaks, Inc.	5.78	0.00	0.00	0.00	0.00	5.78	No Access	0.00
162	22	111	2.01	Highway 35	Lackland Holding Co. LLC	19.70	0.84	6.99	0.44	0.00	11.43	Incompatible Land Uses & on-site flooding conditions (see Suitability Report)	0.00
						391.01	81.21	16.31	0.44	0.00	293.05		140.85

EXCLUSIONS:

A) Wet - NJ Freshwater Wetlands	C) Other:	1. Inadequate / No Access	3. Incompatible Land Use	5. Lot Size (lots 0.8 acre or less)
B) Floodplain/ Flood Hazard Area		2. Public Utilities/ Easements	4. Shape of Lot	6. OS - Dedicated open space

Prepared by: T & M Associates

July 25, 2002

VACANT LAND INVENTORY 2002: FARM QUALIFIED PROPERTIES
BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification							Area Exclusions as per N.J.A.C. 5:93-4.2(e)						
							Environmentally Sensitive						
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Owner	Site Area (acres)	Wet Areas *Sec. 4.2(e)2*	Floodplain *Sec. 4.2(e)2*	Steep Slopes *Sec. 4.2(e)2*	Conserv. & Open Space *Sec.4.2(e)5*	Total Not Suitable	Exclusion Codes & Remarks	Net Developable Acres
F-1	9	63	5	Highway 35	Frangella, M. c/o Eatontown TV	4.85	1.51	2.02	0.00	0.00	3.53	Incompatible Land Uses & Flooding	0.00
F-2	11	82	6.01	101 Monmouth Road	Schmitt, J	3.53	1.02	0.10	0.00	0.00	1.12	No Access	0.00
F-3	17	94	2	144 Grant Ave.	Rose, Stella	5.70	1.83	0.00	0.00	0.00	1.83	To be Acquired for Open Space	0.00
F-4	17	99	2	144 Grant Ave.	Rose, Stella	5.59	1.94	0.00	0.00	0.00	1.94	To be Acquired for Open Space	0.00
F-5	28, 29	136	1, 2.01, 3.01	325 Old Deal Road	Regan, John & Ruth	8.52	0.00	0.00	0.00	0.00	0.00	Inadequate Access/ Cul-de-sac	0.00
						28.19	6.30	2.12	0.00	0.00	8.42		0.00

EXCLUSIONS:

A) Wet - NJ Freshwater Wetlands
B) Floodplain/ Flood Hazard Area
C) Other:
1. Inadequate / No Access
2. Public Utilities/ Easements
3. Incompatible Land Use
4. Shape of Lot
5. Lot Size (lots 0.8 acre or less)
6. OS - Dedicated open space

Prepared by: T & M Associates
July 25, 2002

VACANT LAND INVENTORY 2002: SUMMARY TABLE

BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification					Area Exclusions as per N.J.A.C. 5:93-4.2(e)					Net Developable Acres	Density (Units per Acre)	Total Units	Set Aside	RDP
					Environmentally Sensitive			Conserv. & Open Space	Total Constraints					
Site ID No.	Block	Lot	Location	Site Area (acres)	Wet Areas *Sec. 4.2(e)2*	Floodplain *Sec. 4.2(e)2*	Steep Slopes *Sec. 4.2(e)2*	*Sec.4.2(e)5*	(acres)					
64	82/92.13	10/19	Route 36	106.56	4.60	1.59	0.00	0.00	6.19	100.37	6.0	602	20%	120
85	92	20	Highway 36	10.00	1.91	0.00	0.00	0.00	1.91	8.09	6.0	49	20%	10
109	101	7 & 8	Wyckoff Road	8.99	4.08	0.11	0.00	0.00	4.19	4.80	6.0	29	20%	6
113	104	11.02/ 10	Parker Road	6.61	0.00	0.00	0.00	0.00	0.00	6.61	6.0	40	20%	8
116	107	4	Parker Road	4.77	0.00	0.00	0.00	0.00	0.00	4.77	6.0	29	20%	6
126	113	27.01, 28	Wall Street	4.42	0.00	0.00	0.00	0.00	0.00	4.42	6.0	27	20%	5
154*	135/136.01	3/1	Old Deal Road	9.77	0.00	0.00	0.00	0.00	0.00	9.77	3.2	31	20%	6
				151.12	10.59	1.70	0.00	0.00	12.29	138.83		806		161

* = As per court approved settlement

EXCLUSIONS:

A) Wet - NJ Freshwater Wetlands
B) Floodplain/ Flood Hazard Area
C) Other:
1. Inadequate / No Access
2. Public Utilities/ Easements
3. Incompatible Land Use
4. Shape of Lot
5. Lot Size (lots 0.8 acre or less)
6. OS - Dedicated open space

Prepared by: T & M Associates

July 25, 2002

APPENDIX C

Public Lands Table

VACANT LAND INVENTORY: PUBLIC LANDS
BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification								
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Area Name (if known)	Site Area (acres)	ROSI Status	Comments
P-1	5	4	1, 2, 21, 22	Tinton Avenue	Maxwell Street Playground	0.42	Unfunded	Active Recreation
P-2	5	4	10-13	Tinton Avenue	Borough of Eatontown	0.41		Vacant (isolated small lot)
P-3	5	6	10, 11	Maxwell Road	Borough of Eatontown	1.00		Pumping Station (Sewerage Authority)
P-4	8	6	13	Maxwell Road	Borough of Eatontown	0.25		Floodplain, Wetlands
P-5	5	8	6, 7	Highway 35	Wampum Lake Park	18.18	Funded	Passive Recreation
	5	10	1-19	Highway 35				
	5	10.01	1	Highway 35				
	5	11	5.04, 5.05	West Street				
	5	12	26	Lewis Street				
P-6	5	11	3	Highway 35	Borough of Eatontown	0.05		Part of Wampum Lake Park (Not on ROSI)
	5	11	4	Highway 35	Borough of Eatontown	0.07		
	5	11	5.01	West Street	Borough of Eatontown	0.39		
P-7	5	12	8	Lewis Street	Borough of Eatontown	0.15		Wampum Lake Park (Parking & Driveway)
P-8	9	12	32	Lewis Street	Borough of Eatontown	0.60		Parking Lot for Public Works
P-9	5	13	2.01, 11	Throckmorton Avenue	Borough of Eatontown	2.03		Municipal Parking Lot & Cell Tower Site
P-10	5	14	3.01, 12-16	Throckmorton Avenue	Borough of Eatontown	1.59		Parking Lot
	6	14	17, 18	Broad Street	Borough of Eatontown	0.56		Borough Hall
	5	14	19	Broad Street	Borough of Eatontown	0.31		Fire House
	5	14	20, 21	Broad Street	Borough of Eatontown	0.43		Library
P-11	6	15	19	Broad Street	Borough of Eatontown	0.31		Museum
P-12	7	27	1, 2	Park Avenue	Borough of Eatontown	0.14		Vacant (isolated small lot)
P-13	7	30	15, 16, 17, 18.01	Main Street	Bullwinkle Park	0.20	Unfunded	Active Recreation
P-14	6	36	2, 3	Broad Street	Borough of Eatontown	0.74		Community Center Annex
P-15	6	37	1, 20-31, 34-44	Byrnes Lane	Bliss Price Arboretum	57.82	Unfunded	Passive Recreation
	6	39	9-20, 27-30	Cloverdale Avenue				
	6	40	1-3, 18-33	La Fetra Avenue				
	6	41	1, 2, 5-11	Cliftwood Avenue				
	6	42	1-17	Cliftwood Avenue				
	6	43	1-14	Cliftwood Avenue				
	6	71	1	Wyckoff Road				
P-16	6	43	46 (incl. 47)	Broad Street	Borough of Eatontown	0.11		Floodplain
P-17	9	54	2	Lewis Street	Borough of Eatontown	0.60		Floodplain, Wetlands

VACANT LAND INVENTORY: PUBLIC LANDS
BOROUGH OF EATONTOWN, NEW JERSEY

Site Identification								
Site ID No.	Tax Map Sheet #	Block	Lot	Location	Area Name (if known)	Site Area (acres)	ROSI Status	Comments
P-18	9	55	8.01	Pinebrook Road	Borough of Eatontown	0.15		Access to Public Works & Bus Garage
P-19	9	57	22, 23, 36, 53, 54, 72, 74	Lewis Street	Wolcott Park	16.67	Funded	Active Recreation
P-20	5	57.01	3	Hwy. 35 cutoff	Borough of Eatontown	0.57		Parking Lot
P-21	9	59	1	Maple/Clinton/Locust	Borough of Eatontown	0.18		Municipal Open Space (not on ROSI)
P-22	9	65	6	Highway 35	Borough of Eatontown	0.03		Floodplain
P-23	10	67.01	14	Appleby Street	Borough of Eatontown	0.58		Detention Basin
P-24	10	73	38	Wyckoff Road	Meadowbrook Park	1.97	Unfunded	Active Recreation
P-25	13	83	2	Victor Place	Borough of Eatontown	0.15		Home for Senior Citizen with Life Rights
P-26	13	84	20.01	Grant Avenue	Borough of Eatontown	0.02		Vacant (isolated small lot)
P-27	13	84	57	South Street	Borough of Eatontown	0.15		Floodplain
P-28	14	91	2	South Street	Borough of Eatontown	1.09		Cemetery
P-29	25	93	32	Route 18	Borough of Eatontown	3.17		Vacant (wet, lack of access)
P-30	16	93.06	21	Nottingham Drive	Deepwood Park	3.07	Unfunded	Tot Lot (detention basin, pumping station)
P-31	17	99.01	13	Jeryl & Emma	Borough of Eatontown	1.50		Stream & Detention Basins
P-32	18	103	3.11	Russell Terrace	Borough of Eatontown	0.52		Detention Basin
P-33	19 19	106 106.01	1 1-3	Parker Road	80 Acre Park	85.58	Funded	Active Recreation
P-34	26	111	51	Fieldstone Court	Borough of Eatontown	2.62		Vacant - To be dedicated for open space
P-35	22	113	40.10	Judy Road	Borough of Eatontown	0.28		Detention Basin
P-36	23	114	22	Highway 35	Borough of Eatontown	0.50		Vacant (cell tower application)
P-37	20 25	119 120	1-5 1	Hilbert Parkway Walter Avenue	Borough of Eatontown Borough of Eatontown	0.33 0.10		Vacant (isolated small lot)

TOTAL ACREAGE	205.56
ACTIVE RECREATION	107.91
CONSERVATION, PARKLANDS & OPEN SPACE	76.00
TOTAL ROSI SITES (ACRES)	183.91

APPENDIX D

Public Lands Maps

P-3 Public Land Parcel (as per tax assessment records)

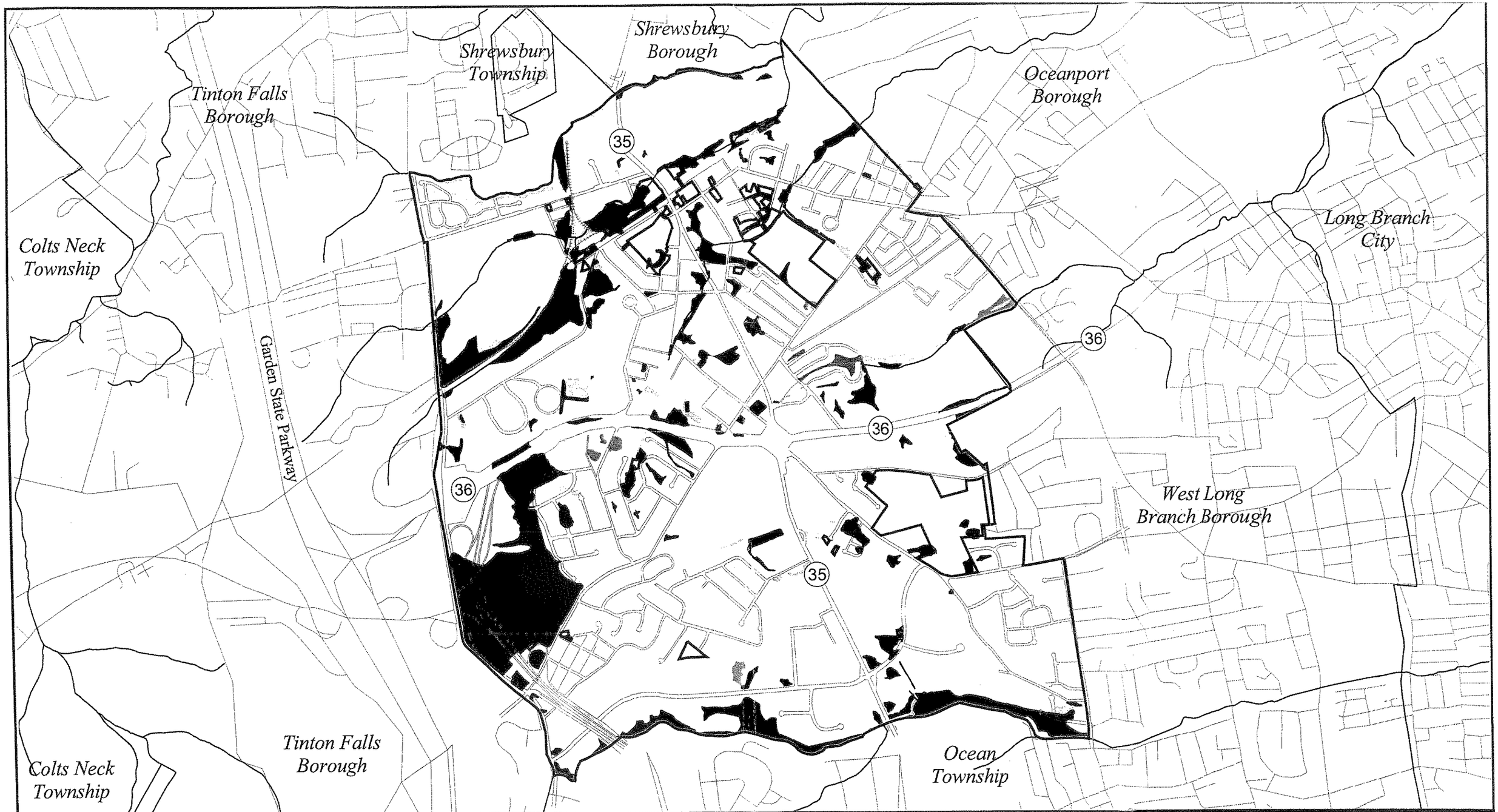
PUBLIC LAND INVENTORY
BOROUGH OF EATONTOWN

Monmouth County, New Jersey

Scale in Feet
0 500 1000 1500 2000

Prepared by: T & M Associates June 17, 2002.

T&M ASSOCIATES



T&M ASSOCIATES

1000 0 1000 2000 Feet

This map was developed using NJDEP GIS digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

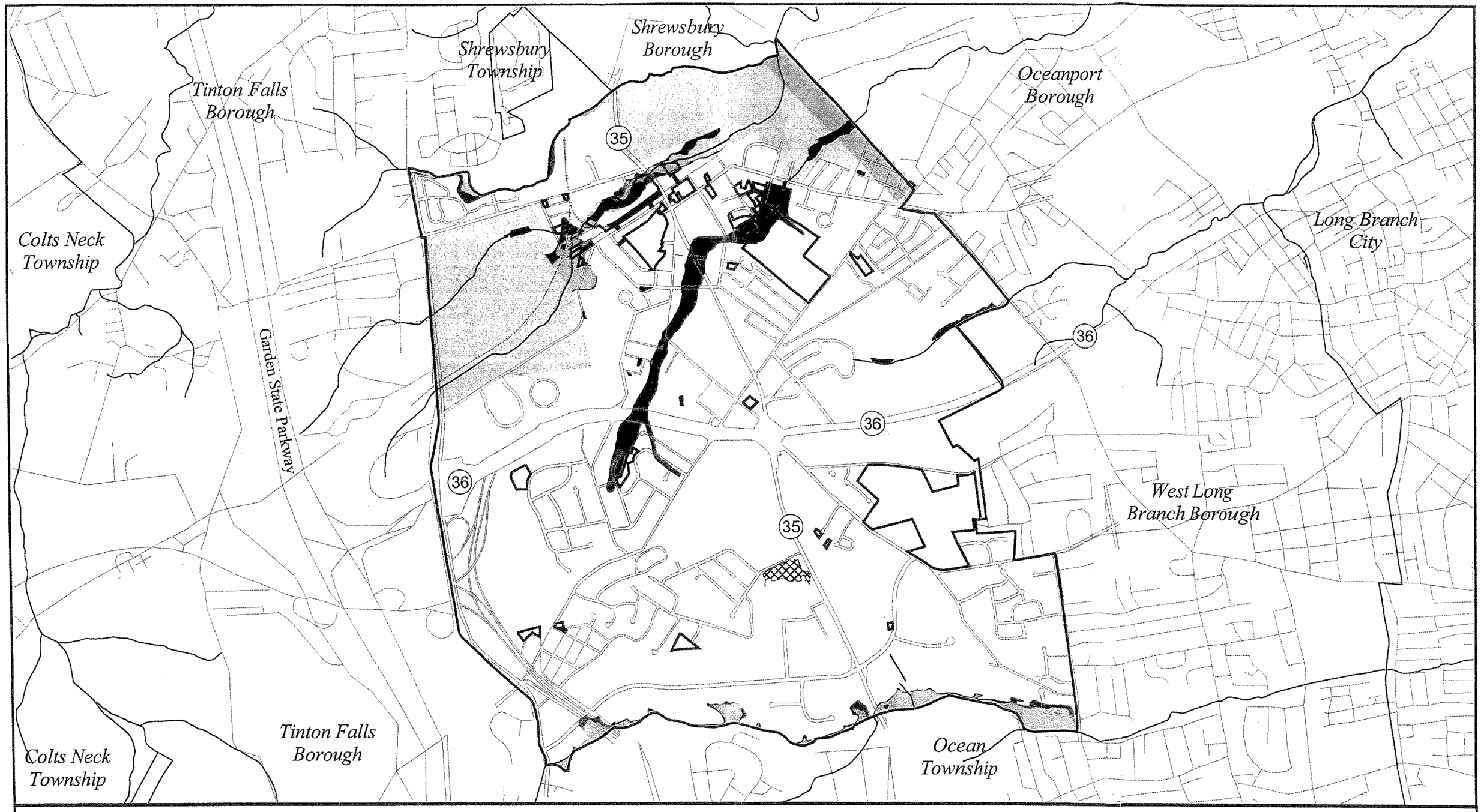
- Agricultural Wetlands
- Deciduous Wooded Wetlands
- Deciduous Shrub-Scrub Wetlands
- Herbaceous Wetlands
- Disturbed Wetlands (Modified)
- Managed Wetlands (Modified)
- Wetland Rights-of-Way (Modified)
- Open Water
- Streams
- Municipal Parcels
- Roadways
- Municipal Boundaries

N

Municipal Properties: Wetlands
Borough of Eatontown
Monmouth County, NJ

Prepared by: T & M Associates, June 25, 2002.

Source: NJDEP Freshwater Wetlands, 1995.



TM ASSOCIATES

1000 0 1000 2000 Feet

This map was developed using NJDEP GIS digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.

N

- Floodprone Areas (100-year flood)
- Floodprone Areas (500-year flood)
- Non- Floodprone Areas
- Undetermined
- Not Mapped
- Lakes
- Streams
- Municipal Parcels
- Roadways
- Municipal Boundaries
- On Site Flood Hazard Delineation

Municipal Properties: Floodprone Areas
Borough of Eatontown
Monmouth County, NJ

Prepared by: T & M Associates, June 25, 2002.
Source: FEMA Flood Insurance Rate Map Data, 1996.

APPENDIX E

Aerial Photos of Sites Contributing to the RDP

Sites 64 & 85
Vacant Land Inventory

N

TM ASSOCIATES

200 0 200 400 Feet

Undocumented Floodprone Areas

Freshwater Wetlands

2' Contours

FEMA Boundary

Site Boundary

Municipal Boundary

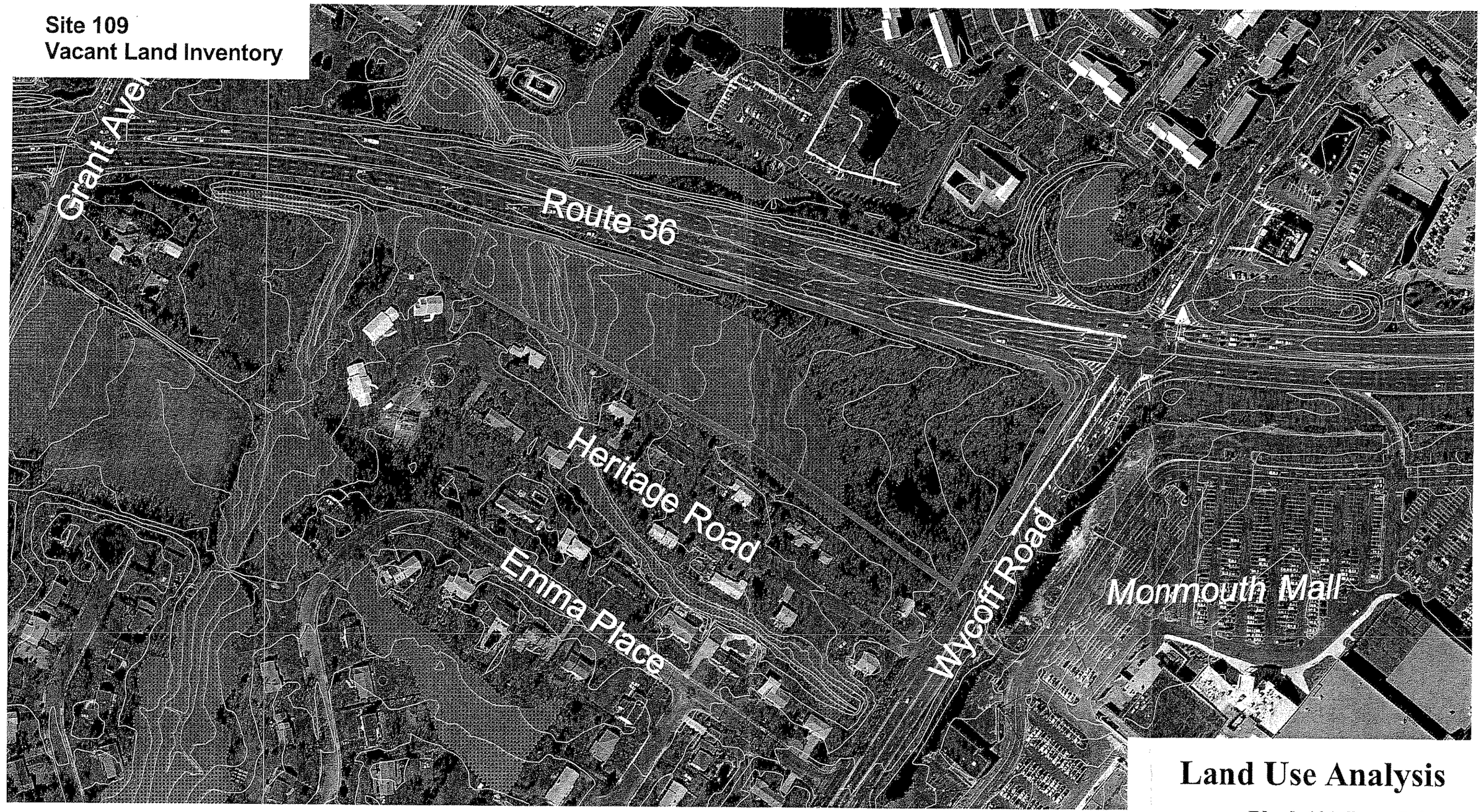
Land Use Analysis

Block 82, Lot 10 and Block 92.13, Lot 19;
Block 92, Lot 20

Old Orchard Country Club Associates &
John Schmeltz Properties

Borough of Eatontown
Monmouth County, NJ

Site 109
Vacant Land Inventory



N

TM ASSOCIATES

100 0 100 200 Feet

Undocumented Floodprone Areas

Freshwater Wetlands

2' Contours

Water Bodies

Streams

FEMA Boundary

Site Boundary

Municipal Boundary

This map was developed using NJDEP Projection GIS digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map was developed, in part, using Monmouth County Geographic System Program digital data, but this secondary product has not been verified by MCGIS and is not warranted by the County.

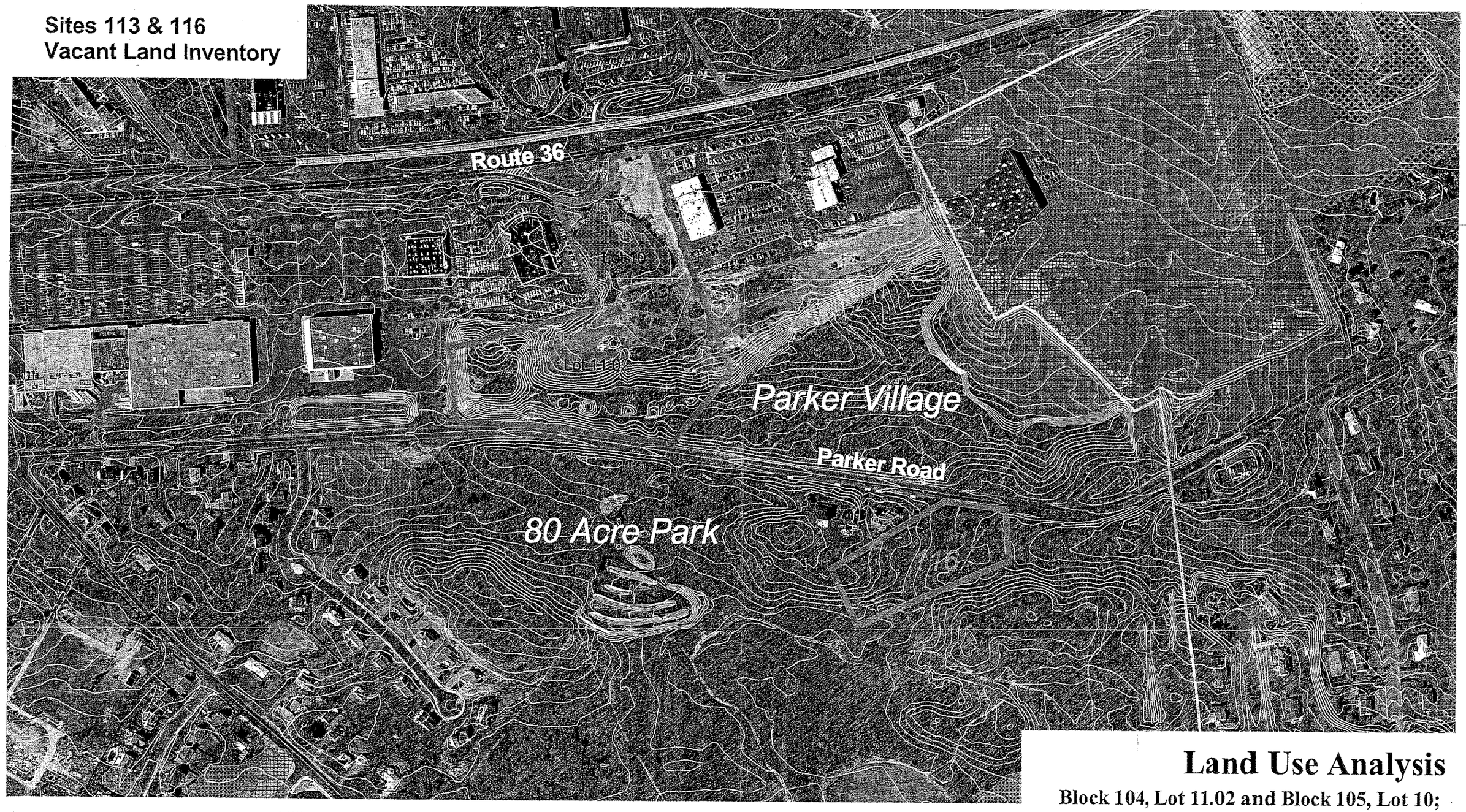
Land Use Analysis

Block 101, Lots 7 & 8

Ocean Ventures Property

Borough of Eatontown
Monmouth County, NJ

Sites 113 & 116
Vacant Land Inventory



N

TM ASSOCIATES

100 0 100 200 Feet

Undocumented Floodprone Areas
Freshwater Wetlands
2' Contours
Water Bodies
Streams
FEMA Boundary
Site Boundary
Municipal Boundary

This map was developed using NJDEP Projection GIS digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map was developed, in part, using Monmouth County Geographic System Program digital data, but this secondary product has not been verified by MCGIS and is not warranted by the County.

Land Use Analysis

Block 104, Lot 11.02 and Block 105, Lot 10;
Block 107, Lot 4

DCH Investments Inc. &
Kahn, Walter and Susan

Borough of Eatontown
Monmouth County, NJ

Site 126
Vacant Land Inventory

N

TM ASSOCIATES

200 0 200 400 Feet

Undocumented Floodprone Areas
Freshwater Wetlands
2' Contours
Water Bodies
Streams
Other Flood Prone Areas
FEMA Boundary
Property Boundary
Municipal Boundary

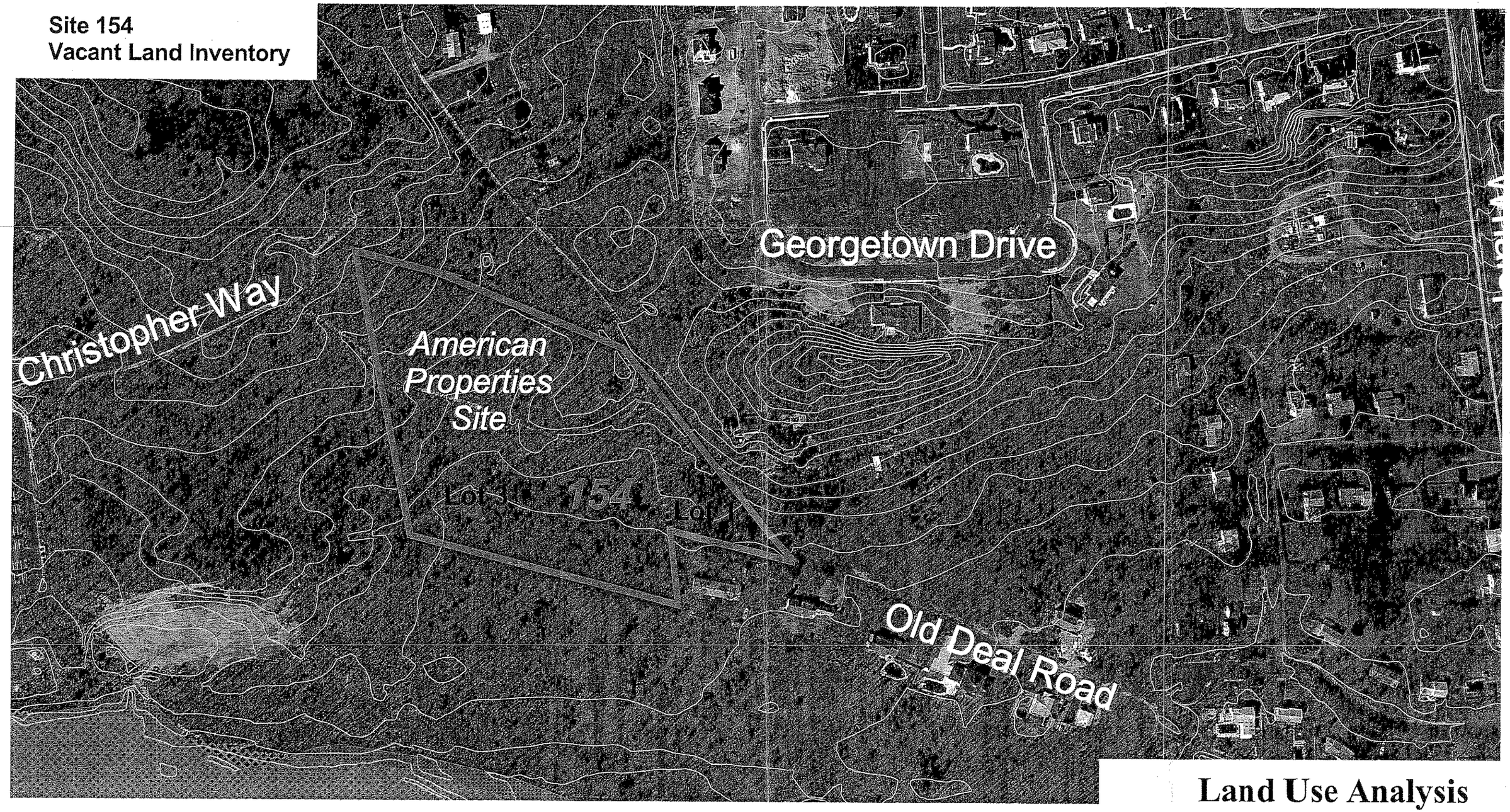
Land Use Analysis

Block 113, Lot 27.01, 28

Tormee Company

Borough of Eatontown
Monmouth County, NJ

Site 154
Vacant Land Inventory



N

TM ASSOCIATES

200 0 200 400 Feet

Undocumented Floodprone Areas

Freshwater Wetlands

2' Contours

Water Bodies

Streams

FEMA Boundary

Site Boundary

Municipal Boundary

This map was developed using NJDEP Projection GIS digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map was developed, in part, using Monmouth County Geographic System Program digital data, but this secondary product has not been verified by MCGIS and is not warranted by the County.

Land Use Analysis

Block 135, Lot 3 and
Block 136.01, Lot 1

Regan, John & Ruth

Borough of Eatontown
Monmouth County, NJ

Chapter 89. Land Use

Article XIA. Stormwater Management and Control

[Added 5-10-2006 by Ord. No. 21-2006; amended 4-9-2008 by Ord. No. 09-2008; 5-12-2010 by Ord. No. 11-2010; 2-24-2021 by Ord. No. 01-2021]

§ 89-98.1. Scope and purpose.

A. Policy statement. Flood control, groundwater recharge, and pollutant reduction shall be achieved through the use of stormwater management measures, including green infrastructure best management practices (GI BMPs) and nonstructural stormwater management strategies. GI BMPs and low-impact development (LID) should be utilized to meet the goal of maintaining natural hydrology to reduce stormwater runoff volume, reduce erosion, encourage infiltration and groundwater recharge, and reduce pollution. GI BMPs and LID should be developed based upon physical site conditions and the origin, nature and the anticipated quantity, or amount, of potential pollutants. Multiple stormwater management BMPs may be necessary to achieve the established performance standards for water quality, quantity, and groundwater recharge.

B. Purpose. The purpose of this article is to establish minimum stormwater management requirements and controls for major development, as defined below in § **89-98.2**.

C. Applicability.

(1) This article shall be applicable to the following major developments:

(a) Nonresidential major developments; and

(b) Aspects of residential major developments that are not preempted by the Residential Site Improvement Standards at N.J.A.C. 5:21.

(2) This article shall also be applicable to all major developments undertaken by the Borough of Eatontown.

D. Compatibility with other permit and ordinance requirements. Development approvals issued pursuant to this article are to be considered an integral part of development approvals and do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance. In their interpretation and application, the provisions of this article shall be held to be the minimum requirements for the promotion of the public health, safety, and general welfare. This article is not intended to interfere with, abrogate, or annul any other ordinances, rule or regulation, statute, or other provision of law except that, where any provision of this article imposes restrictions different from those imposed by any other ordinance, rule or regulation, or other provision of law, the more restrictive provisions or higher standards shall control.

§ 89-98.2. Definitions.

For the purpose of this article, the following terms, phrases, words and their derivations shall have the meanings stated herein unless their use in the text of this article clearly demonstrates a different meaning. When not inconsistent with the context, words used in the present tense include the future, words used in the plural number include the singular number, and words used in the singular number include the plural number. The word "shall" is always mandatory and not merely directory. The definitions below are the same as or based on the corresponding definitions in the Stormwater Management Rules at N.J.A.C. 7:8-1.2.

CAFRA CENTERS, CORES OR NODES

Those areas with boundaries incorporated by reference or revised by the Department in accordance with N.J.A.C. 7:7-13.16.

CAFRA PLANNING MAP

The map used by the Department to identify the location of Coastal Planning Areas, CAFRA centers, CAFRA cores, and CAFRA nodes. The CAFRA Planning **Map** is available on the Department's Geographic Information System (GIS).

COMMUNITY BASIN

An infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond, established in accordance with N.J.A.C. 7:8-4.2(c)14, that is designed and constructed in accordance with the New Jersey Stormwater Best Management Practices Manual, or an alternate design, approved in accordance with N.J.A.C. 7:8-5.2(g), for an infiltration system, sand filter designed to infiltrate, standard constructed wetland, or wet pond and that complies with the requirements of this article.

COMPACTION

The increase in soil bulk density.

CONTRIBUTORY DRAINAGE AREA

The area from which stormwater runoff drains to a stormwater management measure, not including the area of the stormwater management measure itself.

CORE

A pedestrian-oriented area of commercial and civic uses serving the surrounding municipality, generally including housing and access to public transportation.

COUNTY REVIEW AGENCY

An agency designated by the County Board of Commissioners to review municipal stormwater management plans and implementing ordinance(s). The county review agency may either be:

A. A county planning agency; or

B. A county water resource association created under N.J.S.A. 58:16A-55.5, if the ordinance or resolution delegates authority to approve, conditionally approve, or disapprove municipal stormwater management plans and implementing ordinances.

DEPARTMENT

The Department of Environmental Protection.

DESIGN ENGINEER

A person professionally qualified and duly licensed in New Jersey to perform engineering services that may include, but not necessarily be limited to, development of project requirements, creation and development of project design and preparation of drawings and specifications.

DESIGNATED CENTER

A state development and redevelopment plan center as designated by the State Planning Commission, such as urban, regional, town, village, or hamlet.

DEVELOPMENT

The division of a parcel of land into two or more parcels, the construction, reconstruction, conversion, structural alteration, relocation or enlargement of any building or structure, any mining excavation or landfill, and any use or change in the use of any building or other structure, or land or extension of use of land, for which permission is required under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq. In the case of development of agricultural land, development means any activity that requires a state permit, any activity reviewed by the County Agricultural Board (CAB) and the State Agricultural Development Committee (SADC), and municipal review of any activity not exempted by the Right to Farm Act, N.J.S.A. 4:1C-1 et seq.

DISTURBANCE

The placement or reconstruction of impervious surface or motor vehicle surface, or exposure and/or movement of soil or bedrock or clearing, cutting, or removing of vegetation. Milling and repaving is not considered disturbance for the purposes of this definition.

DRAINAGE AREA

A geographic area within which stormwater, sediments, or dissolved materials drain to a particular receiving water body or to a particular point along a receiving water body.

EMPOWERMENT NEIGHBORHOODS

Neighborhoods designated by the Urban Coordinating Council "in consultation and conjunction with" the New Jersey Redevelopment Authority pursuant to N.J.S.A. 55:19-69.

ENVIRONMENTALLY CONSTRAINED AREA

The following areas where the physical alteration of the land is in some way restricted, either through regulation, easement, deed restriction or ownership, such as wetlands, floodplains, threatened and endangered species sites or designated habitats, and parks and preserves. Habitats of endangered or threatened species are identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

ENVIRONMENTALLY CRITICAL AREA

An area or feature which is of significant environmental value, including, but not limited to, stream corridors, natural heritage priority sites, habitats of endangered or threatened species, large areas of contiguous open space or upland forest, steep slopes, and wellhead protection and groundwater recharge areas. Habitats of endangered or threatened species are identified using the Department's Landscape Project as approved by the Department's Endangered and Nongame Species Program.

EROSION

The detachment and movement of soil or rock fragments by water, wind, ice, or gravity.

GREEN INFRASTRUCTURE

A stormwater management measure that manages stormwater close to its source by:

A. Treating stormwater runoff through infiltration into subsoil;

B. Treating stormwater runoff through filtration by vegetation or soil; or

C. Storing stormwater runoff for reuse.

HUC 14 or HYDROLOGIC UNIT CODE 14

An area within which water drains to a particular receiving surface water body, also known as a "subwatershed," which is identified by a fourteen-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey.

IMPERVIOUS SURFACE

A surface that has been covered with a layer of material so that it is highly resistant to infiltration by water.

INFILTRATION

The process by which water seeps into the soil from precipitation.

LEAD PLANNING AGENCY

One or more public entities having stormwater management planning authority designated by the regional stormwater management planning committee pursuant to N.J.A.C. 7:8-3.2, that serves as the primary representative of the committee.

MAJOR DEVELOPMENT

A. An individual development, as well as multiple developments that individually or collectively result in:

   (1) The disturbance of one or more acres of land since February 2, 2004;

   (2) The creation of 1/4 acre or more of regulated impervious surface since February 2, 2004;

   (3) The creation of 1/4 acre or more of regulated motor vehicle surface since March 2, 2021; or

   (4) A combination of Subsection **A(2)** and **(3)** above that totals an area of 1/4 acre or more. The same surface shall not be counted twice when determining if the combination area equals 1/4 acre or more.

B. Major development includes all developments that are part of a common plan of development or sale (for example, phased residential development) that collectively or individually meet any one or more of Subsection **A(1)**, **(2)**, **(3)** or **(4)** above. Projects undertaken by any government agency that otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered major development.

MOTOR VEHICLE

Land vehicles propelled other than by muscular power, such as automobiles, motorcycles, autocycles, and low-speed vehicles. For the purposes of this definition, motor vehicle does not include farm equipment, snowmobiles, all-terrain vehicles, motorized wheelchairs, go-carts, gas buggies, golf carts, ski-slope grooming machines, or vehicles that run only on rails or tracks.

MOTOR VEHICLE SURFACE

Any pervious or impervious surface that is intended to be used by motor vehicles and/or aircraft and is directly exposed to precipitation, including, but not limited to, driveways, parking areas, parking garages, roads, racetracks, and runways.

MUNICIPALITY

Any city, borough, town, township, or village.

NEW JERSEY STORMWATER BEST MANAGEMENT PRACTICES (BMP) MANUAL or BMP MANUAL

The manual maintained by the Department providing, in part, design specifications, removal rates, calculation methods, and soil testing procedures approved by the Department as being capable of contributing to the achievement of the stormwater management standards specified in this article. The BMP Manual is periodically amended by the Department as necessary to provide design specifications on additional best management practices and new information on already included practices reflecting the best available current information regarding the particular practice and the Department's determination as to the ability of that best management practice to contribute to compliance with the standards contained in this article. Alternative stormwater management measures, removal rates, or calculation methods may be utilized, subject to any limitations specified in this article, provided the design engineer demonstrates to the municipality, in accordance with § **89-98.4F** of this article and N.J.A.C. 7:8-5.2(g), that the proposed measure and

its design will contribute to achievement of the design and performance standards established by this article.

NODE

An area designated by the State Planning Commission concentrating facilities and activities which are not organized in a compact form.

NUTRIENT

A chemical element or compound, such as nitrogen or phosphorus, which is essential to and promotes the development of organisms.

PERSON

Any individual, corporation, company, partnership, firm, association, political subdivision of this state and any state, interstate or federal agency.

POLLUTANT

Any dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, refuse, oil, grease, sewage sludge, munitions, chemical wastes, biological materials, medical wastes, radioactive substance [except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. § 2011 et seq.)], thermal waste, wrecked or discarded equipment, rock, sand, cellar dirt, industrial, municipal, agricultural, and construction waste or runoff, or other residue discharged directly or indirectly to the land, groundwaters or surface waters of the state, or to a domestic treatment works. "Pollutant" includes both hazardous and nonhazardous pollutants.

RECHARGE

The amount of water from precipitation that infiltrates into the ground and is not evapotranspired.

REDEVELOPMENT

An activity that results in the creation, addition, or replacement of impervious surface area on an already developed site. Redevelopment includes, but is not limited to, the expansion of a building footprint; addition or replacement of a structure or a portion of a structure; and replacement of impervious surface area that is not part of a routine maintenance activity. If a project is considered to be a redevelopment project, all new impervious cover, whether created by adding to or replacing impervious cover that was in existence before the redevelopment occurs, shall be considered in calculating the requirements for stormwater management. However, any such new impervious cover that will drain into an existing stormwater best management practice that is to remain after the redevelopment and that meets current stormwater management requirements shall be deducted from the total amount of impervious surface that must be treated by new stormwater best management practices. In the case of a redevelopment project, the predeveloped land cover shall be considered to be wooded.

REGULATED IMPERVIOUS SURFACE

Any of the following, alone or in combination:

A. A net increase of impervious surface;

B. The total area of impervious surface collected by a new stormwater conveyance system (for the purpose of this definition, a "new stormwater conveyance system" is a stormwater conveyance system that is constructed where one did not exist immediately prior to its construction or an existing system for which a new discharge location is created);

C. The total area of impervious surface proposed to be newly collected by an existing stormwater conveyance system; and/or

D. The total area of impervious surface collected by an existing stormwater conveyance system where the capacity of that conveyance system is increased.

REGULATED MOTOR VEHICLE SURFACE

Any of the following, alone or in combination:

A. The total area of motor vehicle surface that is currently receiving water;

B. A net increase in motor vehicle surface; and/or

C. Quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant, where the water quality treatment will be modified or removed.

SEDIMENT

Solid material, mineral or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water or gravity as a product of erosion.

SITE

The lot or lots upon which a major development is to occur or has occurred.

SOIL

All unconsolidated mineral and organic material of any origin.

STATE DEVELOPMENT AND REDEVELOPMENT PLAN METROPOLITAN PLANNING AREA (PA1)

An area delineated on the State Plan Policy **Map** and adopted by the State Planning Commission that is intended to be the focus for much of the state's future redevelopment and revitalization efforts.

STATE PLAN POLICY MAP

The geographic application of the State Development and Redevelopment Plan's goals and statewide policies, and the official map of these goals and policies.

STORMWATER

Water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, or is captured by separate storm sewers or other sewage or drainage facilities, or conveyed by snow removal equipment.

STORMWATER MANAGEMENT BMP

An excavation or embankment and related areas designed to retain stormwater runoff. A stormwater management BMP may either be normally dry (that is, a detention basin or infiltration system), retain water in a permanent pool (a retention basin), or be planted mainly with wetland vegetation (most constructed stormwater wetlands).

STORMWATER MANAGEMENT MEASURE

Any practice, technology, process, program, or other method intended to control or reduce stormwater runoff and associated pollutants, or to induce or control the infiltration or groundwater recharge of stormwater or to eliminate illicit or illegal nonstormwater discharges into stormwater conveyances.

STORMWATER MANAGEMENT PLANNING AGENCY

A public body authorized by legislation to prepare stormwater management plans.

STORMWATER MANAGEMENT PLANNING AREA

The geographic area for which a stormwater management planning agency is authorized to prepare stormwater management plans, or a specific portion of that area identified in a stormwater management plan prepared by that agency.

STORMWATER RUNOFF

Water flow on the surface of the ground or in storm sewers, resulting from precipitation.

TIDAL FLOOD HAZARD AREA

A flood hazard area in which the flood elevation resulting from the two-, ten-, or 100-year storm, as applicable, is governed by tidal flooding from the Atlantic Ocean. Flooding in a tidal flood hazard

area may be contributed to, or influenced by, stormwater runoff from inland areas, but the depth of flooding generated by the tidal rise and fall of the Atlantic Ocean is greater than flooding from any fluvial sources. In some situations, depending upon the extent of the storm surge from a particular storm event, a flood hazard area may be tidal in the 100-year storm, but fluvial in more frequent storm events.

URBAN COORDINATING COUNCIL EMPOWERMENT NEIGHBORHOOD

A neighborhood given priority access to state resources through the New Jersey Redevelopment Authority.

URBAN ENTERPRISE ZONES

A zone designated by the New Jersey Enterprise Zone Authority pursuant to the New Jersey Urban Enterprise Zones Act, N.J.S.A. 52:27H-60 et seq.

URBAN REDEVELOPMENT AREA

Previously developed portions of areas:

A. Delineated on the State Plan Policy **Map** (SPPM) as the Metropolitan Planning Area (PA1), designated centers, cores or nodes;

B. Designated as CAFRA centers, cores or nodes;

C. Designated as Urban Enterprise Zones; and

D. Designated as Urban Coordinating Council Empowerment Neighborhoods.

WATER CONTROL STRUCTURE

A structure within, or adjacent to, a water, which intentionally or coincidentally alters the hydraulic capacity, the flood elevation resulting from the two-, ten-, or 100-year storm, flood hazard area limit, and/or floodway limit of the water. Examples of a water control structure may include a bridge, culvert, dam, embankment, ford (if above grade), retaining wall, and weir.

WATERS OF THE STATE

The ocean and its estuaries, all springs, streams, wetlands, and bodies of surface water or groundwater, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction.

WETLANDS or WETLAND

An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as "hydrophytic vegetation."

§ 89-98.3. Design and performance standards for stormwater management measures.

A. Stormwater management measures for major development shall be designed to provide erosion control, groundwater recharge, stormwater runoff quantity control, and stormwater runoff quality treatment as follows:

(1) The minimum standards for erosion control are those established under the Soil and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules at N.J.A.C. 2:90.

(2) The minimum standards for groundwater recharge, stormwater quality, and stormwater runoff quantity shall be met by incorporating green infrastructure.

B. The standards in this article apply only to new major development and are intended to minimize the impact of stormwater runoff on water quality and water quantity in receiving water bodies and

maintain groundwater recharge. The standards do not apply to new major development to the extent that alternative design and performance standards are applicable under a regional stormwater management plan or water quality management plan adopted in accordance with Department rules.

§ 89-98.4. Stormwater management requirements for major development.

A. The development shall incorporate a maintenance plan for the stormwater management measures incorporated into the design of a major development in accordance with § 89-98.10.

B. Stormwater management measures shall avoid adverse impacts of concentrated flow on habitat for threatened and endangered species as documented in the Department's Landscape Project or Natural Heritage Database established under N.J.S.A. 13:1B-15.147 through 13:1B-15.150, particularly Helonias bullata (swamp pink) and/or Clemmys muhlenbergii (bog turtle).

C. The following linear development projects are exempt from the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of § **89-98.4P**, **Q** and **R**:

(1) The construction of an underground utility line, provided that the disturbed areas are revegetated upon completion;

(2) The construction of an aboveground utility line, provided that the existing conditions are maintained to the maximum extent practicable; and

(3) The construction of a public pedestrian access, such as a sidewalk or trail with a maximum width of 14 feet, provided that the access is made of permeable material.

D. A waiver from strict compliance from the green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity requirements of § **89-98.4O**, **P**, **Q** and **R** may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access, provided that the following conditions are met:

(1) The applicant demonstrates that there is a public need for the project that cannot be accomplished by any other means;

(2) The applicant demonstrates through an alternatives analysis, that through the use of stormwater management measures, the option selected complies with the requirements of § **89-98.4O**, **P**, **Q** and **R** to the maximum extent practicable;

(3) The applicant demonstrates that, in order to meet the requirements of § **89-98.4O**, **P**, **Q** and **R**, existing structures currently in use, such as homes and buildings, would need to be condemned; and

(4) The applicant demonstrates that it does not own or have other rights to areas, including the potential to obtain through condemnation lands not falling under § **89-98.4D(3)** above within the upstream drainage area of the receiving stream, that would provide additional opportunities to mitigate the requirements of § **89-98.4O**, **P**, **Q** and **R** that were not achievable on-site.

E. Tables 1 through 3 below summarize the ability of stormwater best management practices identified and described in the New Jersey Stormwater Best Management Practices Manual to satisfy the green infrastructure, groundwater recharge, stormwater runoff quality and stormwater runoff quantity standards specified in § **89-98.4O**, **P**, **Q** and **R**. When designed in accordance with the most current version of the New Jersey Stormwater Best Management Practices Manual, the stormwater management measures found at N.J.A.C. 7:8-5.2(f), Tables 5-1, 5-2 and 5-3, and listed below in Tables 1, 2 and 3, are presumed to be capable of providing stormwater controls for the design and performance standards as outlined in the tables below. Upon amendments of the New Jersey Stormwater Best Management Practices to reflect additions or deletions of BMPs

meeting these standards, or changes in the presumed performance of BMPs designed in accordance with the New Jersey Stormwater BMP Manual, the Department shall publish in the New Jersey Registers a notice of administrative change revising the applicable table. The most current version of the BMP Manual can be found on the Department's website at https://njstormwater.org/bmp_manual2.htm.

F. Where the BMP tables in the NJ Stormwater Management Rule are different due to updates or amendments with the tables in this article, the BMP Tables in the Stormwater Management Rule at N.J.A.C. 7:8-5.2(f) shall take precedence.

Table 1

Green Infrastructure BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High-Water Table (feet)
Cistern	0%	Yes	No	
Dry well[a]	0%	No	Yes	2
Grass swale	50% or less	No	No	2[e] 1[f]
Green roof	0%	Yes	No	
Manufactured treatment device[a][g]	50% or 80%	No	No	Dependent upon the device
Pervious paving system[a]	80%	Yes	Yes[b] No[c]	2[b] 1[c]
Small-scale bioretention basin[a]	80% or 90%	Yes	Yes[b] No[c]	2[b] 1[c]
Small-scale infiltration basin[a]	80%	Yes	Yes	2
Small-scale sand filter	80%	Yes	Yes	2
Vegetative filter strip	60% to 80%	No	No	—

(Notes corresponding to annotations[a] through[g] are found on beneath Table 3.)

Table 2

Green Infrastructure BMPs for Stormwater Runoff Quantity (or for Groundwater Recharge and/or Stormwater Runoff Quality with a Waiver or Variance from N.J.A.C. 7:8-5.3)

Best Management Practice	Stormwater Runoff Quality TSS Removal Rate	Stormwater Runoff Quantity	Groundwater Recharge	Minimum Separation from Seasonal High-Water Table (feet)
Bioretention system	80% or 90%	Yes	Yes[b] No[c]	2[b] 1[c]
Infiltration basin	80%	Yes	Yes	2

Table 2				
Green Infrastructure BMPs for Stormwater Runoff Quantity (or for Groundwater Recharge and/or Stormwater Runoff Quality with a Waiver or Variance from N.J.A.C. 7:8-5.3)				
Best Management Practice	**Stormwater Runoff Quality TSS Removal Rate**	**Stormwater Runoff Quantity**	**Groundwater Recharge**	**Minimum Separation from Seasonal High-Water Table (feet)**
Sand filter[(b)]	80%	Yes	Yes	2
Standard constructed wetland	90%	Yes	No	N/A
Wet pond[(d)]	50% to 90%	Yes	No	N/A

(Notes corresponding to annotations[(b)] through[(d)] are found beneath Table 3.)

Table 3				
BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity only with a Waiver or Variance from N.J.A.C. 7:8-5.3				
Best Management Practice	**Stormwater Runoff Quality TSS Removal Rate**	**Stormwater Runoff Quantity**	**Groundwater Recharge**	**Minimum Separation from Seasonal High-Water Table (feet)**
Blue roof	0%	Yes	No	N/A
Extended detention basin	40% to 60%	Yes	No	1
Manufactured treatment device[(h)]	50% or 80%	No	No	Dependent upon the device
Sand filter[(c)]	80%	Yes	No	1
Subsurface gravel wetland	90%	No	No	1
Wet pond	50% to 90%	Yes	No	N/A

Notes to Tables 1, 2, and 3:

(a) Subject to the applicable contributory drainage area limitation specified at § **89-98.4O(2)**;

(b) Designed to infiltrate into the subsoil;

(c) Designed with underdrains;

(d) Designed to maintain at least a ten-foot-wide area of native vegetation along at least 50% of the shoreline and to include a stormwater runoff retention component designed to capture stormwater runoff for beneficial reuse, such as irrigation;

(e) Designed with a slope of less than 2%;

(f) Designed with a slope of equal to or greater than 2%;

(g) Manufactured treatment devices that meet the definition of "green infrastructure" at § **89-98.2**;

(h) Manufactured treatment devices that do not meet the definition of "green infrastructure" at § **89-98.2**.

G. An alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate may be used if the design engineer demonstrates the capability of the proposed alternative stormwater management measure and/or the validity of the alternative rate or method to the municipality. A copy of any approved alternative stormwater management measure, alternative removal rate, and/or alternative method to calculate the removal rate shall be provided to the Department in accordance with § **89-98.4B**. Alternative stormwater management measures may be used to satisfy the requirements at § **89-98.4O** only if the measures meet the definition of "green infrastructure" at § **89-98.2**. Alternative stormwater management measures that function in a similar manner to a BMP listed at Subsection **O(2)** are subject to the contributory drainage area limitation specified at Subsection **O(2)** for that similarly functioning BMP. Alternative stormwater management measures approved in accordance with this subsection that do not function in a similar manner to any BMP listed at Subsection **O(2)** shall have a contributory drainage area less than or equal to 2.5 acres, except for alternative stormwater management measures that function similarly to cisterns, grass swales, green roofs, standard constructed wetlands, vegetative filter strips, and wet ponds, which are not subject to a contributory drainage area limitation. Alternative measures that function similarly to standard constructed wetlands or wet ponds shall not be used for compliance with the stormwater runoff quality standard unless a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with § **89-98.4D** is granted from § **89-98.4O**.

H. Whenever the stormwater management design includes one or more BMPs that will infiltrate stormwater into subsoil, the design engineer shall assess the hydraulic impact on the groundwater table and design the site, so as to avoid adverse hydraulic impacts. Potential adverse hydraulic impacts include, but are not limited to, exacerbating a naturally or seasonally high-water table, so as to cause surficial ponding, flooding of basements, or interference with the proper operation of subsurface sewage disposal systems or other subsurface structures within the zone of influence of the groundwater mound, or interference with the proper functioning of the stormwater management measure itself.

I. Design standards for stormwater management measures are as follows:

(1) Stormwater management measures shall be designed to take into account the existing site conditions, including, but not limited to, environmentally critical areas; wetlands; flood-prone areas; slopes; depth to seasonal high-water table; soil type, permeability, and texture; drainage area and drainage patterns; and the presence of solution-prone carbonate rocks (limestone);

(2) Stormwater management measures shall be designed to minimize maintenance, facilitate maintenance and repairs, and ensure proper functioning. Trash racks shall be installed at the intake to the outlet structure, as appropriate, and shall have parallel bars with one-inch spacing between the bars to the elevation of the water quality design storm. For elevations higher than the water quality design storm, the parallel bars at the outlet structure shall be spaced no greater than 1/3 the width of the diameter of the orifice or 1/3 the width of the weir, with a minimum spacing between bars of one inch and a maximum spacing between bars of six inches. In addition, the design of trash racks must comply with the requirements of § **89-98.8C**;

(3) Stormwater management measures shall be designed, constructed, and installed to be strong, durable, and corrosion resistant. Measures that are consistent with the relevant portions of the Residential Site Improvement Standards at N.J.A.C. 5:21-7.3, 5:21-7.4, and 5:21-7.5 shall be deemed to meet this requirement;

(4) Stormwater management BMPs shall be designed to meet the minimum safety standards for stormwater management BMPs at § **89-98.7**; and

(5) The size of the orifice at the intake to the outlet from the stormwater management BMP shall be a minimum of 2 1/2 inches in diameter.

J. Manufactured treatment devices may be used to meet the requirements of this subsection, provided the pollutant removal rates are verified by the New Jersey Corporation for Advanced

Technology and certified by the Department. Manufactured treatment devices that do not meet the definition of "green infrastructure" at § **89-98.2** may be used only under the circumstances described at § **89-98.4O(4)**.

K. Any application for a new agricultural development that meets the definition of "major development" at § **89-98.2** shall be submitted to the Soil Conservation District for review and approval in accordance with the requirements at § **89-98.4O**, **P**, **Q** and **R** and any applicable Soil Conservation District guidelines for stormwater runoff quantity and erosion control. For purposes of this subsection, "agricultural development" means land uses normally associated with the production of food, fiber, and livestock for sale. Such uses do not include the development of land for the processing or sale of food and the manufacture of agriculturally related products.

L. If there is more than one drainage area, the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at § **89-98.4P**, **Q** and **R** shall be met in each drainage area, unless the runoff from the drainage areas converge on-site and no adverse environmental impact would occur as a result of compliance with any one or more of the individual standards being determined utilizing a weighted average of the results achieved for that individual standard across the affected drainage areas.

M. Any stormwater management measure authorized under the municipal stormwater management plan or ordinance shall be reflected in a deed notice recorded in the office of the County Clerk. A form of deed notice shall be submitted to the municipality for approval prior to filing. The deed notice shall contain a description of the stormwater management measure(s) used to meet the green infrastructure, groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at § **89-98.4O**, **P**, **Q** and **R** and shall identify the location of the stormwater management measure(s) in NAD 1983 State Plane New Jersey FIPS 2900 US feet or latitude and longitude in decimal degrees. The deed notice shall also reference the maintenance plan required to be recorded upon the deed pursuant to § 89-98.10B(5). Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the municipality. Proof that the required information has been recorded on the deed shall be in the form of either a copy of the complete recorded document or a receipt from the Clerk or other proof of recordation provided by the recording office. However, if the initial proof provided to the municipality is not a copy of the complete recorded document, a copy of the complete recorded document shall be provided to the municipality within 180 calendar days of the authorization granted by the municipality.

N. A stormwater management measure approved under the municipal stormwater management plan or ordinance may be altered or replaced with the approval of the municipality, if the municipality determines that the proposed alteration or replacement meets the design and performance standards pursuant to § **89-98.4** of this article and provides the same level of stormwater management as the previously approved stormwater management measure that is being altered or replaced. If an alteration or replacement is approved, a revised deed notice shall be submitted to the municipality for approval and subsequently recorded with the office of the County Clerk and shall contain a description and location of the stormwater management measure, as well as reference to the maintenance plan, in accordance with Subsection **M** above. Prior to the commencement of construction, proof that the above required deed notice has been filed shall be submitted to the municipality in accordance with Subsection **M** above.

O. Green infrastructure standards.

(1) This subsection specifies the types of green infrastructure BMPs that may be used to satisfy the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards.

(2) To satisfy the groundwater recharge and stormwater runoff quality standards at § **89-98.4P** and **Q**, the design engineer shall utilize green infrastructure BMPs identified in Table 1 at § **89-98.4F** and/or an alternative stormwater management measure approved in accordance with § **89-98.4G**. The following green infrastructure BMPs are subject to the following maximum contributory drainage area limitations:

Best Management Practice	Maximum Contributory Drainage Area (acres)
Dry well	1
Manufactured treatment device	2.5
Pervious pavement systems	Area of additional inflow cannot exceed 3 times the area occupied by the BMP
Small-scale bioretention systems	2.5
Small-scale infiltration basin	2.5
Small-scale sand filter	2.5

(3) To satisfy the stormwater runoff quantity standards at § **89-98.4R**, the design engineer shall utilize BMPs from Table 1 or from Table 2 and/or an alternative stormwater management measure approved in accordance with § **89-98.4G**.

(4) If a variance in accordance with N.J.A.C. 7:8-4.6 or a waiver from strict compliance in accordance with § **89-98.4D** is granted from the requirements of this subsection, then BMPs from Table 1, 2, or 3, and/or an alternative stormwater management measure approved in accordance with § **89-98.4G** may be used to meet the groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards at § **89-98.4P**, **Q** and **R**.

(5) For separate or combined storm sewer improvement projects, such as sewer separation, undertaken by a government agency or public utility (for example, a sewerage company), the requirements of this subsection shall only apply to areas owned in fee simple by the government agency or utility, and areas within a right-of-way or easement held or controlled by the government agency or utility; the entity shall not be required to obtain additional property or property rights to fully satisfy the requirements of this subsection. Regardless of the amount of area of a separate or combined storm sewer improvement project subject to the green infrastructure requirements of this subsection, each project shall fully comply with the applicable groundwater recharge, stormwater runoff quality control, and stormwater runoff quantity standards at § **89-98.4P**, **Q** and **R**, unless the project is granted a waiver from strict compliance in accordance with § **89-98.4D**.

P. Groundwater recharge standards.

(1) This subsection contains the minimum design and performance standards for groundwater recharge as follows:

(2) The design engineer shall, using the assumptions and factors for stormwater runoff and groundwater recharge calculations at § **89-98.5**, either:

(a) Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual preconstruction groundwater recharge volume for the site; or

(b) Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from preconstruction to post-construction for the two-year storm is infiltrated.

(3) This groundwater recharge requirement does not apply to projects within the urban redevelopment area, or to projects subject to Subsection **P(4)** below.

(4) The following types of stormwater shall not be recharged:

(a) Stormwater from areas of high pollutant loading. High pollutant loading areas are areas in industrial and commercial developments where solvents and/or petroleum products are loaded/unloaded, stored, or applied, areas where pesticides are loaded/unloaded or stored; areas where hazardous materials are expected to be present in greater than "reportable quantities" as defined by the United States Environmental Protection Agency

(EPA) at 40 CFR 302.4; areas where recharge would be inconsistent with Department-approved remedial action work plan or landfill closure plan and areas with high risks for spills of toxic materials, such as gas stations and vehicle maintenance facilities; and

(b) Industrial stormwater exposed to source material. "Source material" means any material(s) or machinery, located at an industrial facility, that is directly or indirectly related to process, manufacturing or other industrial activities, which could be a source of pollutants in any industrial stormwater discharge to groundwater. Source materials include, but are not limited to, raw materials; intermediate products; final products; waste materials; by-products; industrial machinery and fuels, and lubricants, solvents, and detergents that are related to process, manufacturing, or other industrial activities that are exposed to stormwater.

Q. Stormwater runoff quality standards.

(1) This subsection contains the minimum design and performance standards to control stormwater runoff quality impacts of major development. Stormwater runoff quality standards are applicable when the major development results in an increase of 1/4 acre or more of regulated motor vehicle surface.

(2) Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm as follows:

(a) 80% TSS removal of the anticipated load, expressed as an annual average shall be achieved for the stormwater runoff from the net increase of motor vehicle surface.

(b) If the surface is considered regulated motor vehicle surface because the water quality treatment for an area of motor vehicle surface that is currently receiving water quality treatment either by vegetation or soil, by an existing stormwater management measure, or by treatment at a wastewater treatment plant is to be modified or removed, the project shall maintain or increase the existing TSS removal of the anticipated load expressed as an annual average.

(3) The requirement to reduce TSS does not apply to any stormwater runoff in a discharge regulated under a numeric effluent limitation for TSS imposed under the New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, or in a discharge specifically exempt under a NJPDES permit from this requirement. Every major development, including any that discharge into a combined sewer system, shall comply with Subsection **Q(2)** above, unless the major development is itself subject to a NJPDES permit with a numeric effluent limitation for TSS or the NJPDES permit to which the major development is subject exempts the development from a numeric effluent limitation for TSS.

(4) The water quality design storm is 1.25 inches of rainfall in two hours. Water quality calculations shall take into account the distribution of rain from the water quality design storm, as reflected in Table 4, below. The calculation of the volume of runoff may take into account the implementation of stormwater management measures.

Table 4

Water Quality Design Storm Distribution

Time (minutes)	Cumulative Rainfall (inches)	Time (minutes)	Cumulative Rainfall (inches)	Time (minutes)	Cumulative Rainfall (inches)
1	0.00166	41	0.1728	81	1.0906
2	0.00332	42	0.1796	82	1.0972
3	0.00498	43	0.1864	83	1.1038
4	0.00664	44	0.1932	84	1.1104

Table 4

Water Quality Design Storm Distribution

Time (minutes)	Cumulative Rainfall (inches)	Time (minutes)	Cumulative Rainfall (inches)	Time (minutes)	Cumulative Rainfall (inches)
5	0.00830	45	0.2000	85	1.1170
6	0.00996	46	0.2117	86	1.1236
7	0.01162	47	0.2233	87	1.1302
8	0.01328	48	0.2350	88	1.1368
9	0.01494	49	0.2466	89	1.1434
10	0.01660	50	0.2583	90	1.1500
11	0.01828	51	0.2783	91	1.1550
12	0.01996	52	0.2983	92	1.1600
13	0.02164	53	0.3183	93	1.1650
14	0.02332	54	0.3383	94	1.1700
15	0.02500	55	0.3583	95	1.1750
16	0.03000	56	0.4116	96	1.1800
17	0.03500	57	0.4650	97	1.1850
18	0.04000	58	0.5183	98	1.1900
19	0.04500	59	0.5717	99	1.1950
20	0.05000	60	0.6250	100	1.2000
21	0.05500	61	0.6783	101	1.2050
22	0.06000	62	0.7317	102	1.2100
23	0.06500	63	0.7850	103	1.2150
24	0.07000	64	0.8384	104	1.2200
25	0.07500	65	0.8917	105	1.2250
26	0.08000	66	0.9117	106	1.2267
27	0.08500	67	0.9317	107	1.2284
28	0.09000	68	0.9517	108	1.2300
29	0.09500	69	0.9717	109	1.2317
30	0.10000	70	0.9917	110	1.2334
31	0.10660	71	1.0034	111	1.2351
32	0.11320	72	1.0150	112	1.2367
33	0.11980	73	1.0267	113	1.2384
34	0.12640	74	1.0383	114	1.2400
35	0.13300	75	1.0500	115	1.2417
36	0.13960	76	1.0568	116	1.2434
37	0.14620	77	1.0636	117	1.2450
38	0.15280	78	1.0704	118	1.2467
39	0.15940	79	1.0772	119	1.2483
40	0.16600	80	1.0840	120	1.2500

(5) If more than one BMP in series is necessary to achieve the required 80% TSS reduction for a site, the applicant shall utilize the following formula to calculate TSS reduction:

$$R = A + B - (A \times B)/100$$

Where:

R	=	total TSS percent load removal from application of both BMPs.
A	=	the TSS percent removal rate applicable to the first BMP.
B	=	the TSS percent removal rate applicable to the second BMP.

(6) Stormwater management measures shall also be designed to reduce, to the maximum extent feasible, the post-construction nutrient load of the anticipated load from the developed site in stormwater runoff generated from the water quality design storm. In achieving reduction of nutrients to the maximum extent feasible, the design of the site shall include green infrastructure BMPs that optimize nutrient removal while still achieving the performance standards in § **89-98.4P**, **Q** and **R**.

(7) In accordance with the definition of "FW1" at N.J.A.C. 7:9B-1.4, stormwater management measures shall be designed to prevent any increase in stormwater runoff to waters classified as "FW1."

(8) The Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-4.1(c)1 establish 300-foot riparian zones along Category One waters, as designated in the Surface Water Quality Standards at N.J.A.C. 7:9B, and certain upstream tributaries to Category One waters. A person shall not undertake a major development that is located within or discharges into a 300-foot riparian zone without prior authorization from the Department under N.J.A.C. 7:13.

(9) Pursuant to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-11.2(j)3i, runoff from the water quality design storm that is discharged within a 300-foot riparian zone shall be treated in accordance with this subsection to reduce the post-construction load of total suspended solids by 95% of the anticipated load from the developed site, expressed as an annual average.

(10) These stormwater runoff quality standards do not apply to the construction of one individual single-family dwelling, provided that it is not part of a larger development or subdivision that has received preliminary or final site plan approval prior to December 3, 2018, and that the motor vehicle surfaces are made of permeable material(s), such as gravel, dirt, and/or shells.

R. Stormwater runoff quantity standards.

(1) This subsection contains the minimum design and performance standards to control stormwater runoff quantity impacts of major development.

(2) In order to control stormwater runoff quantity impacts, the design engineer shall, using the assumptions and factors for stormwater runoff calculations at § **89-98.5**, complete one of the following:

(a) Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two-, ten-, and 100-year storm events do not exceed, at any point in time, the preconstruction runoff hydrographs for the same storm events;

(b) Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the preconstruction condition, in the peak runoff rates of stormwater leaving the site for the two-, ten- and 100-year storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site. This analysis shall include the analysis of impacts of existing land uses and projected land uses assuming full development under existing zoning and land use ordinances in the drainage area;

(c) Design stormwater management measures so that the post-construction peak runoff rates for the two-, ten- and 100-year storm events are 50%, 75% and 80%, respectively,

of the preconstruction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed; or

(d) In tidal flood hazard areas, stormwater runoff quantity analysis in accordance with Subsection **R(2)(a)**, **(b)** and **(c)** above is required unless the design engineer demonstrates through hydrologic and hydraulic analysis that the increased volume, change in timing, or increased rate of the stormwater runoff, or any combination of the three will not result in additional flood damage below the point of discharge of the major development. No analysis is required if the stormwater is discharged directly into any ocean, bay, inlet, or the reach of any watercourse between its confluence with an ocean, bay, or inlet and downstream of the first water control structure.

(3) The stormwater runoff quantity standards shall be applied at the site's boundary to each abutting lot, roadway, watercourse, or receiving storm sewer system.

§ 89-98.5. Calculation of stormwater runoff and groundwater recharge.

A. Stormwater runoff shall be calculated in accordance with the following:

(1) The design engineer shall calculate runoff using one of the following methods:

(a) The USDA Natural Resources Conservation Service (NRCS) methodology, including the NRCS Runoff Equation and Dimensionless Unit Hydrograph, as described in Chapters **7**, 9, 10, 15 and 16, Part 630, Hydrology National Engineering Handbook, incorporated herein by reference, as amended and supplemented. This methodology is additionally described in Technical Release 55 - Urban Hydrology for Small Watersheds (TR-55), dated June 1986, incorporated herein by reference, as amended and supplemented. Information regarding the methodology is available from the Natural Resources Conservation Service website at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf or at United States Department of Agriculture Natural Resources Conservation Service, 220 Davison Avenue, Somerset, New Jersey 08873; or

(b) The Rational Method for peak flow and the Modified Rational Method for hydrograph computations. The Rational and Modified Rational Methods are described in "Appendix A-9 Modified Rational Method" in the Standards for Soil Erosion and Sediment Control in New Jersey, January 2014. This document is available from the State Soil Conservation Committee or any of the soil conservation districts listed at N.J.A.C. 2:90-1.3(a)3. The location, address, and telephone number for each Soil Conservation District is available from the State Soil Conservation Committee, PO Box 330, Trenton, New Jersey 08625. The document is also available at http://www.nj.gov/agriculture/divisions/anr/pdf/2014NJSoilErosionControlStandardsComplete.pdf

(2) For the purpose of calculating runoff coefficients and groundwater recharge, there is a presumption that the preconstruction condition of a site or portion thereof is a wooded land use with good hydrologic condition. The term "runoff coefficient" applies to both the NRCS methodology above at § **89-98.5A(1)(a)** and the Rational and Modified Rational Methods at § **89-98.5A(1)(b)**. A runoff coefficient or a groundwater recharge land cover for an existing condition may be used on all or a portion of the site if the design engineer verifies that the hydrologic condition has existed on the site or portion of the site for at least five years without interruption prior to the time of application. If more than one land cover have existed on the site during the five years immediately prior to the time of application, the land cover with the lowest runoff potential shall be used for the computations. In addition, there is the presumption that the site is in good hydrologic condition (if the land use type is pasture, lawn,

or park), with good cover (if the land use type is woods), or with good hydrologic condition and conservation treatment (if the land use type is cultivation).

(3) In computing preconstruction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce preconstruction stormwater runoff rates and volumes.

(4) In computing stormwater runoff from all design storms, the design engineer shall consider the relative stormwater runoff rates and/or volumes of pervious and impervious surfaces separately to accurately compute the rates and volume of stormwater runoff from the site. To calculate runoff from unconnected impervious cover, urban impervious area modifications as described in the NRCS Technical Release 55 - Urban Hydrology for Small Watersheds or other methods may be employed.

(5) If the invert of the outlet structure of a stormwater management measure is below the flood hazard design flood elevation as defined at N.J.A.C. 7:13, the design engineer shall take into account the effects of tailwater in the design of structural stormwater management measures.

B. Groundwater recharge may be calculated in accordance with the following: the New Jersey Geological Survey Report GSR-32, A Method for Evaluating Ground-Water-Recharge Areas in New Jersey, incorporated herein by reference, as amended and supplemented. Information regarding the methodology is available from the New Jersey Stormwater Best Management Practices Manual; at the New Jersey Geological Survey website at https://www.nj.gov/dep/njgs/pricelst/gsreport/gsr32.pdf or at the New Jersey Geological and Water Survey, 29 Arctic Parkway, PO Box 420 Mail Code 29-01, Trenton, New Jersey 08625-0420.

§ 89-98.6. Sources for technical guidance.

A. Technical guidance for stormwater management measures can be found in the documents listed below, which are available to download from the Department's website at http://www.nj.gov/dep/stormwater/bmp_manual2.htm.

(1) Guidelines for stormwater management measures are contained in the New Jersey Stormwater Best Management Practices Manual, as amended and supplemented. Information is provided on stormwater management measures such as, but not limited to, those listed in Tables 1, 2, and 3.

(2) Additional maintenance guidance is available on the Department's website at https://www.njstormwater.org/maintenance_guidance.htm.

B. Submissions required for review by the Department should be mailed to the Division of Water Quality, New Jersey Department of Environmental Protection, Mail Code 401-02B, PO Box 420, Trenton, New Jersey 08625-0420.

§ 89-98.7. Solids and floatable materials control standards.

Site design features identified under § **89-98.4F** above, or alternative designs in accordance with § **89-98.4G** above, to prevent discharge of trash and debris from drainage systems shall comply with the following standard to control passage of solid and floatable materials through storm drain inlets. For purposes of this section, "solid and floatable materials" means sediment, debris, trash, and other floating, suspended, or settleable solids. For exemptions to this standard see § **89-98.7A(2)** below.

A. Design engineers shall use one of the following grates whenever they use a grate in pavement or another ground surface to collect stormwater from that surface into a storm drain or surface water body under that grate:

(1) The New Jersey Department of Transportation (NJDOT) bicycle-safe grate, which is described in Chapter 2.4 of the NJDOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines; or

(2) A different grate, if each individual clear space in that grate has an area of no more than 7.0 square inches, or is no greater than 0.5 inch across the smallest dimension. Examples of grates subject to this standard include grates in grate inlets, the grate portion (non-curb-opening portion) of combination inlets, grates on storm sewer manholes, ditch grates, trench grates, and grates of spacer bars in slotted drains. Examples of ground surfaces include surfaces of roads (including bridges), driveways, parking areas, bikeways, plazas, sidewalks, lawns, fields, open channels, and stormwater system floors used to collect stormwater from the surface into a storm drain or surface water body.

(3) For curb-opening inlets, including curb-opening inlets in combination inlets, the clear space in that curb opening, or each individual clear space if the curb opening has two or more clear spaces, shall have an area of no more than 7.0 square inches, or be no greater than 2.0 inches across the smallest dimension.

B. The standard in Subsection **A** above does not apply:

(1) Where each individual clear space in the curb opening in existing curb-opening inlet does not have an area of more than 9.0 square inches;

(2) Where the municipality agrees that the standards would cause inadequate hydraulic performance that could not practicably be overcome by using additional or larger storm drain inlets;

(3) Where flows from the water quality design storm as specified in N.J.A.C. 7:8 are conveyed through any device (e.g., end of pipe netting facility, manufactured treatment device, or a catch basin hood) that is designed, at a minimum, to prevent delivery of all solid and floatable materials that could not pass through one of the following:

(a) A rectangular space 4.625 inches long and 1.5 inches wide (this option does not apply for outfall netting facilities); or

(b) A bar screen having a bar spacing of 0.5 inch.

(c) Note that these exemptions do not authorize any infringement of requirements in the Residential Site Improvement Standards for bicycle-safe grates in new residential development [N.J.A.C. 5:21-4.18(b)2 and 5:21-7.4(b)1].

(4) Where flows are conveyed through a trash rack that has parallel bars with one-inch spacing between the bars, to the elevation of the water quality design storm as specified in N.J.A.C. 7:8; or

(5) Where the New Jersey Department of Environmental Protection determines, pursuant to the New Jersey Register of Historic Places Rules at N.J.A.C. 7:4-7.2(c), that action to meet this standard is an undertaking that constitutes an encroachment or will damage or destroy the New Jersey Register listed historic property.

§ 89-98.8. Safety standards for stormwater management basins.

A. This section sets forth requirements to protect public safety through the proper design and operation of stormwater management BMPs. This section applies to any new stormwater management BMP.

B. The provisions of this section are not intended to preempt more stringent municipal or county safety requirements for new or existing stormwater management BMPs. Municipal and county stormwater management plans and ordinances may, pursuant to their authority, require existing

stormwater management BMPs to be retrofitted to meet one or more of the safety standards in § **89-98.8C(1)**, **(2)** and **(3)** for trash racks, overflow grates, and escape provisions at outlet structures.

C. Requirements for trash racks, overflow grates and escape provisions.

(1) A trash rack is a device designed to catch trash and debris and prevent the clogging of outlet structures. Trash racks shall be installed at the intake to the outlet from the stormwater management BMP to ensure proper functioning of the BMP outlets in accordance with the following:

(a) The trash rack shall have parallel bars, with no greater than six-inch spacing between the bars;

(b) The trash rack shall be designed so as not to adversely affect the hydraulic performance of the outlet pipe or structure;

(c) The average velocity of flow through a clean trash rack is not to exceed 2.5 feet per second under the full range of stage and discharge. Velocity is to be computed on the basis of the net area of opening through the rack; and

(d) The trash rack shall be constructed of rigid, durable, and corrosion-resistant material and designed to withstand a perpendicular live loading of 300 pounds per square foot.

(2) An overflow grate is designed to prevent obstruction of the overflow structure. If an outlet structure has an overflow grate, such grate shall meet the following requirements:

(a) The overflow grate shall be secured to the outlet structure but removable for emergencies and maintenance.

(b) The overflow grate spacing shall be no less than two inches across the smallest dimension.

(c) The overflow grate shall be constructed and installed to be rigid, durable, and corrosion resistant and shall be designed to withstand a perpendicular live loading of 300 pounds per square foot.

(3) Stormwater management BMPs shall include escape provisions as follows:

(a) If a stormwater management BMP has an outlet structure, escape provisions shall be incorporated in or on the structure. Escape provisions include the installation of permanent ladders, steps, rungs, or other features that provide easily accessible means of egress from stormwater management BMPs. With the prior approval of the municipality pursuant to § **89-98.8C**, a freestanding outlet structure may be exempted from this requirement;

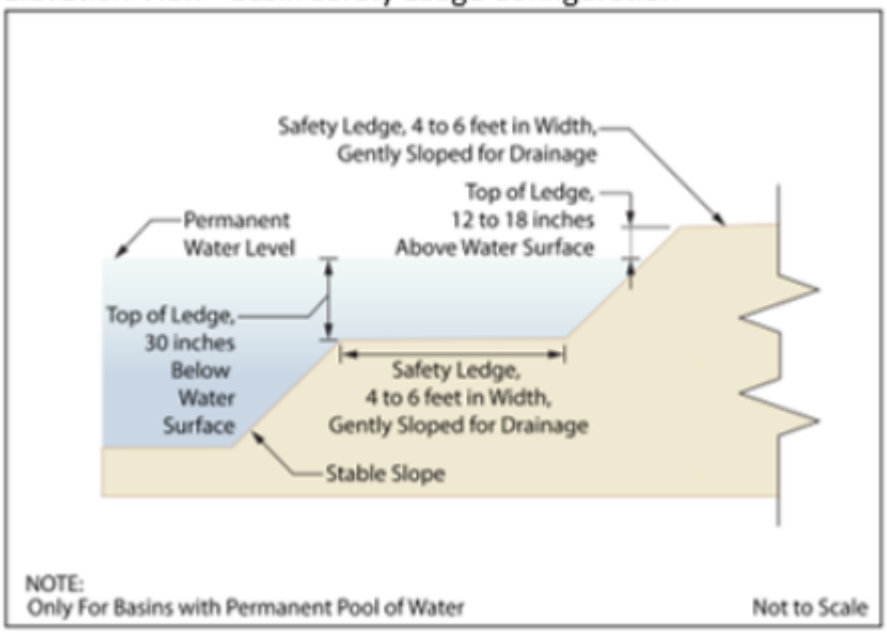
(b) Safety ledges shall be constructed on the slopes of all new stormwater management BMPs having permanent pool of water deeper than 2 1/2 feet. Safety ledges shall be comprised of two steps. Each step shall be four feet to six feet in width. One step shall be located approximately 2 1/2 feet below the permanent water surface, and the second step shall be located 1 1/2 feet above the permanent water surface. See § **89-98.8E** for an illustration of safety ledges in a stormwater management BMP; and

(c) In new stormwater management BMPs, the maximum interior slope for an earthen dam, embankment, or berm shall not be steeper than three horizontal to one vertical.

D. Variance or exemption from safety standard. A variance or exemption from the safety standards for stormwater management BMPs may be granted only upon a written finding by the municipality that the variance or exemption will not constitute a threat to public safety.

E. Safety ledge illustration.

Elevation View –Basin Safety Ledge Configuration



§ 89-98.9. Requirements for a site development stormwater plan.

A. Submission of site development stormwater plan.

(1) Whenever an applicant seeks municipal approval of a development subject to this article, the applicant shall submit all of the required components of the Checklist for the Site Development Stormwater Plan at § **89-98.9C** below as part of the submission of the application for approval.

(2) The applicant shall demonstrate that the project meets the standards set forth in this article.

(3) The applicant shall submit 15 copies of the materials listed in the Checklist for Site Development Stormwater Plans in accordance with § **89-98.9C** of this article.

B. Site development stormwater plan approval. The applicant's site development project shall be reviewed as a part of the review process by the municipal board or official from which municipal approval is sought. That municipal board or official shall consult the municipality's review engineer to determine if all of the checklist requirements have been satisfied and to determine if the project meets the standards set forth in this article.

C. Submission of site development stormwater plan. The following information shall be required:

(1) Topographic base map. The reviewing engineer may require upstream tributary drainage system information as necessary. It is recommended that the topographic base map of the site be submitted which extends a minimum of 200 feet beyond the limits of the proposed development, at a scale of one inch equals 200 feet or greater, showing two-foot contour intervals. The map as appropriate may indicate the following: existing surface water drainage, shorelines, steep slopes, soils, erodible soils, perennial or intermittent streams that drain into or upstream of the Category One waters, wetlands and floodplains along with their appropriate buffer strips, marshlands and other wetlands, pervious or vegetative surfaces, existing man-made structures, roads, bearing and distances of property lines, and significant natural and man-made features not otherwise shown.

(2) Environmental site analysis. A written and graphic description of the natural and man-made features of the site and its surroundings should be submitted. This description should include a discussion of soil conditions, slopes, wetlands, waterways and vegetation on the site.

Particular attention should be given to unique, unusual, or environmentally sensitive features and to those that provide particular opportunities or constraints for development.

(3) Project description and site plans. A map (or maps) at the scale of the topographical base map indicating the location of existing and proposed buildings roads, parking areas, utilities, structural facilities for stormwater management and sediment control, and other permanent structures. The map(s) shall also clearly show areas where alterations will occur in the natural terrain and cover, including lawns and other landscaping, and seasonal high groundwater elevations. A written description of the site plan and justification for proposed changes in natural conditions shall also be provided.

(4) Land use planning and source control plan. This plan shall provide a demonstration of how the goals and standards of §§ **89-98.3** through **89-98.5** are being met. The focus of this plan shall be to describe how the site is being developed to meet the objective of controlling groundwater recharge, stormwater quality and stormwater quantity problems at the source by land management and source controls whenever possible.

(5) Stormwater management facilities map. The following information, illustrated on a map of the same scale as the topographic base map, shall be included:

(a) Total area to be disturbed, paved or built upon, proposed surface contours, land area to be occupied by the stormwater management facilities and the type of vegetation thereon, and details of the proposed plan to control and dispose of stormwater.

(b) Details of all stormwater management facility designs, during and after construction, including discharge provisions, discharge capacity for each outlet at different levels of detention and emergency spillway provisions with maximum discharge capacity of each spillway.

(6) Calculations.

(a) Comprehensive hydrologic and hydraulic design calculations for the predevelopment and post-development conditions for the design storms specified in § **89-98.6** of this article.

(b) When the proposed stormwater management control measures depend on the hydrologic properties of soils or require certain separation from the seasonal high-water table, then a soils report shall be submitted. The soils report shall be based on on-site boring logs or soil pit profiles. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soils present at the location of the control measure.

(7) Maintenance and repair plan. The design and planning of the stormwater management facility shall meet the maintenance requirements of § 89-98.10.

(8) Waiver from submission requirements. The municipal official or board reviewing an application under this article may, in consultation with the municipality's review engineer, waive submission of any of the requirements in § **89-98.9C(1)** through **(6)** of this article when it can be demonstrated that the information requested is impossible to obtain or it would create a hardship on the applicant to obtain and its absence will not materially affect the review process.

§ 89-98.10. Maintenance and repair.

A. Applicability. Projects subject to review as in § **89-98.1C** of this article shall comply with the requirements of §§ 89-98.10B and 89-98.10C.

B. General maintenance.

(1) The design engineer shall prepare a maintenance plan for the stormwater management measures incorporated into the design of a major development.

(2) The maintenance plan shall contain specific preventative maintenance tasks and schedules; cost estimates, including estimated cost of sediment, debris, or trash removal; and the name, address, and telephone number of the person or persons responsible for preventative and corrective maintenance (including replacement). The plan shall contain information on BMP location, design, ownership, maintenance tasks and frequencies, and other details as specified in Chapter 8 of the NJ BMP Manual, as well as the tasks specific to the type of BMP, as described in the applicable chapter containing design specifics.

(3) If the maintenance plan identifies a person other than the property owner (for example, a developer, a public agency or homeowners' association) as having the responsibility for maintenance, the plan shall include documentation of such person's or entity's agreement to assume this responsibility or of the owner's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

(4) Responsibility for maintenance shall not be assigned or transferred to the owner or tenant of an individual property in a residential development or project, unless such owner or tenant owns or leases the entire residential development or project. The individual property owner may be assigned incidental tasks, such as weeding of a green infrastructure BMP, provided the individual agrees to assume these tasks; however, the individual cannot be legally responsible for all of the maintenance required.

(5) If the party responsible for maintenance identified under § 89-98.10B(3) above is not a public agency, the maintenance plan and any future revisions based on § 89-98.10B(7) below shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

(6) Preventative and corrective maintenance shall be performed to maintain the functional parameters (storage volume, infiltration rates, inflow/outflow capacity, etc.) of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of nonvegetated linings.

(7) The party responsible for maintenance identified under § 89-98.10B(3) above shall perform all of the following requirements:

(a) Maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders;

(b) Evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed; and

(c) Retain and make available, upon request by any public entity with administrative, health, environmental, or safety authority over the site, the maintenance plan and the documentation required by § 89-98.10B(6) and (7) above.

(8) The requirements of § 89-98.10B(3) and (4) do not apply to stormwater management facilities that are dedicated to and accepted by the municipality or another governmental agency, subject to all applicable municipal stormwater general permit conditions, as issued by the Department.

(9) In the event that the stormwater management facility becomes a danger to public safety or public health, or if it is in need of maintenance or repair, the municipality shall so notify the responsible person in writing. Upon receipt of that notice, the responsible person shall have 14 days to effect maintenance and repair of the facility in a manner that is approved by the Municipal Engineer or his designee. The municipality, in its discretion, may extend the time

allowed for effecting maintenance and repair for good cause. If the responsible person fails or refuses to perform such maintenance and repair, the municipality or county may immediately proceed to do so and shall bill the cost thereof to the responsible person. Nonpayment of such bill may result in a lien on the property. To facilitate such inspection and maintenance, a drainage easement shall be provided to the municipality for all stormwater management BMPs. The easement shall provide the Borough the right, but not the obligation, to access the BMPs when necessary for inspection and maintenance. In no way do such easements transfer any maintenance responsibilities to the Borough.

C. Nothing in this section shall preclude the municipality in which the major development is located from requiring the posting of a performance or maintenance guarantee in accordance with N.J.S.A. 40:55D-53.

§ 89-98.11. Violations and penalties.

Any person(s) who erects, constructs, alters, repairs, converts, maintains, or uses any building, structure or land in violation of this article shall be subject to the penalties as specified in § **89-117** of the Land Use Ordinance.

APPENDIX 2

Major Development Stormwater Summary Report

Major Development Stormwater Summary

General Information
1. Project Name:
2. Municipality: County: Block(s): Lot(s):
3. Site Location (State Plane Coordinates – NAD83): E: N:
4. Date of Final Approval for Construction by Municipality: Date of Certificate of Occupancy:
5. Project Type (check all that apply): Residential ☐ Commercial ☐ Industrial ☐ Other (please specify) _____
6. Soil Conservation District Project Number:
7. Did project require an NJDEP Land Use Permit? Yes ◯ No ◯ Land Use Permit #:
8. Did project require the use of any mitigation measures? Yes ◯ No ◯ If yes, which standard was mitigated? _____

Site Design Specifications
1. Area of Disturbance (acres): Area of Proposed Impervious (acres):
2. List all Hydrologic Soil Groups:
3. Please Identify the Amount of Each Best Management Practices (BMPs) Utilized in Design Below: Bioretention Systems ___ Constructed Wetlands ___ Dry Wells ___ Extended Detention Basins ___ Infiltration Basins ___ Combination Infiltration/Detention Basins ___ Manufactured Treatment Devices___ Pervious Paving Systems ___ Sand Filters ___ Vegetative Filter Strips ___ Wet Ponds ___ Grass Swales ___ Subsurface Gravel Wetlands ___ Other _____

Storm Event Information
Storm Event - Rainfall (inches and duration): 2 yr.: _____ 10 yr.: _____ 100 yr.: _____ WQDS: _____
Runoff Computation Method: NRCS: Dimensionless Unit Hydrograph ☐ NRCS: Delmarva Unit Hydrograph ☐ Rational ☐ Modified Rational ☐ Other: _____

Basin Specifications (answer all that apply) *If more than one basin, attach multiple sheets*
1. Type of Basin: Surface/Subsurface (select one): Surface ◯ Subsurface ◯
2. Owner (select one): ◯ Public ◯ Private: If so, Name: Phone number:
3. Basin Construction Completion Date:
4. Drain Down Time (hr.):
5. Design Soil Permeability (in./hr.):
6. Seasonal High Water Table Depth from Bottom of Basin (ft.): Date Obtained:
7. Groundwater Recharge Methodology (select one): 2 Year Difference ◯ NJGRS ◯ Other ◯ NA ◯
8. Groundwater Mounding Analysis (select one): Yes ◯ No ◯ If, Yes Methodology Used:
9. Maintenance Plan Submitted: Yes ◯ No ◯ Is the Basin Deed Restricted: Yes ◯ No ◯

Comments:

Name of Person Filling Out This Form: _____ Signature: _____

Title: _____ Date: _____ 2/2/2018

Basin Specifications (answer all that apply) *If more than one basin, attach multiple sheets*
1. Type of Basin: Surface/Subsurface (select one): Surface ◯ Subsurface ◯
2. Owner (select one): ◯ Public ◯ Private: If so, Name: Phone number:
3. Basin Construction Completion Date:
4. Drain Down Time (hr.):
5. Design Soil Permeability (in./hr.):
6. Seasonal High Water Table Depth from Bottom of Basin (ft.): Date Obtained:
7. Groundwater Recharge Methodology (select one): 2 Year Difference ◯ NJGRS ◯ Other ◯ NA ◯
8. Groundwater Mounding Analysis (select one): Yes ◯ No ◯ If, Yes Methodology Used:
9. Maintenance Plan Submitted: Yes ◯ No ◯ Is the Basin Deed Restricted: Yes ◯ No ◯

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8. Groundwater Mounding Analysis (select one): Yes ◯ No ◯ If, Yes Methodology Used:
9. Maintenance Plan Submitted: Yes ◯ No ◯ Is the Basin Deed Restricted: Yes ◯ No ◯

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8. Groundwater Mounding Analysis (select one): Yes ◯ No ◯ If, Yes Methodology Used:
9. Maintenance Plan Submitted: Yes ◯ No ◯ Is the Basin Deed Restricted: Yes ◯ No ◯

Name of Person Filling Out This Form: ________________________ Signature: ________________________

Title: ____ Date: ____________________________

APPENDIX 3

Local Public Education Program

BOROUGH OF EATONTOWN
APPENDIX 3 – LOCAL PUBLIC EDUCATION PROGRAM

Statewide Basic Requirement:

Local Public Education Program - Tier A Municipalities shall implement a Public Education and Outreach Program that focuses on educational and pollution prevention activities about the impacts of stormwater discharges on surface water and groundwater and to involve the public in reducing pollutants in stormwater and mitigating flow.

The Tier A Municipality shall annually conduct activities that total at least 12 points and include activities from at least three of the five categories as set forth in the Table (Points System for Public Education and Outreach Activities) below. At a minimum, at least one of the activities shall involve educating businesses and the general public of hazards associated with illicit connections and improper disposal of waste. Records shall be kept necessary to demonstrate compliance with this requirement, including date of activities and any other relevant documentation.

Category 1: General Public Outreach		
Activity	**Description**	**Points**
Website & Social Media	Maintain a stormwater related page on the municipal website or on a municipal social media site. The web page may include links to other stormwater related resources, including the NJDEP stormwater website (www.njstormwater.org).	1
Newspaper Ad	Use Department created and approved stormwater education materials available on www.cleanwaternj.org to publish an ad in a newspaper or newsletter that serves the municipality.	1
Radio/ Television	Broadcast a radio or television public service announcement from www.cleanwaternj.org on a local radio or municipal public service channel.	1
Green Infra-structure Signage	Post signs at municipally-owned green infrastructure sites that describe the function and importance of the infrastructure, contact phone number, municipal identification number, and/or website for more information. *New signs receive 0.5 credits per sign. Existing signs that are maintained or upgraded receive 0.25 credits per sign. A maximum of 5 credits are allowed.	5*
Billboard/ Sign	Produce and maintain (for credit in subsequent years) a billboard or sign which can be displayed on a bus, bus stop shelter, recreation field (outfield sign), or other similar public venue.	2
Mural	Produce and maintain (for credit in subsequent years) the planning and painting of a stormwater pollution themed mural, storm drain art or other artwork at a local downtown/commercial area or other similar public venue.	2
Stormwater Facility Signage	Post signs at municipally-owned stormwater management basins or other structural stormwater related facilities that describe the function and importance of the facility, contact phone number, municipal identification number, and/or website for more information. *New signs receive 0.5 credits per sign. Existing signs that are maintained or upgraded receive 0.25 credits per sign. A maximum of 5 credits are allowed.	5*

Category 2: Targeted Audiences Outreach		
Activity	**Description**	**Points**
Stormwater Display	Present a stormwater related display or materials at any municipal event (e.g., Earth Day, town picnic), at the municipal building or other similar public venue.	1
Promotional Item	Distribute an item or items with a stormwater related message (e.g., refrigerator magnets, temporary tattoos, key chains, bookmarks, pet waste bag dispensers, coloring books, and pens or pencils). Municipality must initially have available a minimum number of the items equal to 10% of the municipal population.	2
Mailing or e-Mailing Campaign	Provide information to all known owners of stormwater facilities not owned or operated by the municipality (i.e., privately owned) highlighting the importance of proper maintenance of stormwater measures. For assistance, see information at www.nj.gov/dep/stormwater/maintenance_guidance.htm.	3
Mailing or e-Mailing Campaign	Distribute any of the Department's educational brochures, tip cards, or a municipally produced equivalent (e.g., community calendar, newsletter, or recycling schedule) via a mailing to every resident and business in the municipality.	2
Ordinance Education	Distribute a letter or e-mail from the mayor or municipal official to every resident and business in the municipality highlighting the requirements and environmental benefits of the Pet Waste, Wildlife Feeding, Litter Control, Improper Disposal of Waste, Containerized Waste/Yard Waste Collection, Private Storm Drain Inlet Retrofitting and Illicit Connection ordinances. Provide a link to the municipal website where subject ordinances are posted.	3
Category 3: School / Youth Education and Activities		
Activity	**Description**	**Points**
School Presen-tations	Provide water-related educational presentation(s) and/or activities to local preschool, elementary, middle, and/or high school classes using municipal staff or local partner organizations. Topics could include stormwater, nonpoint source pollution, watersheds, water conservation and water quality. For ideas, see information at www.nj.gov/dep/seeds. *Presentations receive 1 credit/presentation, with a maximum of 5 credits allowed.	5*
Water Education Workshops	Provide water-related professional development workshops for local teachers from a registered NJ Department of Education Professional Development Provider.	2
Storm Drain Labeling	Organize a project to label and/or maintain storm drain labels (that are not already precast with a message) with a scout troop, local school district, or faith-based group, or other community youth group for a minimum of 40 labels. This project could also include stenciling over precast labels to improve legibility.	3
Educational Contest for Schools	Organize an educational contest with a local school district or a local community organization serving youth to design a poster, magnet, rain stick, rain barrel or other craft/art object. Contest themes shall have an appropriate stormwater message. Winning entries are to be displayed at publicly accessible locations within the municipality such as at the town hall, library, post office, or school. The winning design should be shown on the municipality's website or social media site, if practical.	3
AmeriCorps Event	Coordinate an event (e.g. volunteer stream monitoring, educational presentations, or stormwater awareness project) through AmeriCorps NJ Watershed Ambassador Program.	4

Clean-up	Sponsor or organize a litter clean up for a scout troop, local school district, faith-based group or other community youth group along a local waterway, public park, stormwater facility, or in an area with storm drains that discharge to a local lake or waterway.	3

Category 4: Watershed/Regional Collaboration		
Activity	**Description**	**Points**
Regional Stormwater Collaboration	Participate in a regional stormwater, community collaborative or other watershed-based group on a regular basis to discuss impaired waterbodies, TMDLs, regional stormwater related issues, or watershed restoration plans that address those waterbodies. Evaluate, develop and implement remedies that resolve stormwater-related issues within the affected waterbody or watershed.	3
Green Infrastructure Workshop	Organize or participate in a rain barrel, rain garden or other green infrastructure workshop on a regional or watershed basis. This could be a partnership exercise with a local watershed organization, utility, university, school, youth/faith-based group, and/or other organization.	3
Community Activity	Organize or participate in the organization of a regional or watershed-based event to carry out stormwater activities such as stormwater facility maintenance or litter clean-up. The municipality may identify and enter into a partnership agreement with a local group such as a watershed organization, utility, university, school, youth/faith-based group, and/or other organization to carry out these activities	3
Category 5: Community Involvement Activities		
Activity	**Description**	**Points**
Volunteer Stormwater Assessment or Stream Monitoring	Establish a volunteer stormwater facility assessment (inspection, inventory and/or mapping) or stream monitoring program for a waterbody within the municipality in order to gauge the health of the waterway through chemical, biological or visual monitoring protocols. Contact NJDEP's AmeriCorps NJ Watershed Ambassador Program or review USEPA National Directory of Volunteer Monitoring Programs.	3
Rain Barrel Workshop	Organize or participate in a rain barrel workshop. This could be a partnership exercise with a local watershed organization, university, school, youth/faith-based group, and/or other nonprofit.	3
Rain Garden Workshop	Organize or participate in a rain garden training or installation workshop. This could be a partnership exercise with a local watershed organization, university, school, youth/faith-based group, and/or other nonprofit.	3
Community Event	Organize or participate in the organization of a community event to carry out stormwater activities such as stormwater measure maintenance or a stream buffer restoration. The municipality may identify and enter into a partnership agreement with a local group such as a watershed organization, university, utility, school, youth/faith-based group, and/or other nonprofit to carry out these activities.	3
Community Involvement	Organize a project with a local organization to create and post signs at either green and/or gray stormwater infrastructure sites or facilities that describe the function and importance of the facility, contact phone number, municipal identification number, and/or website for more information. *Signs receive 0.5 credits per sign. A maximum of 5 credits are allowed.	5*

To comply with the Local Public Education requirement outlined above, the Borough will conduct the following activities:

Category 1 – General Public Outreach (1 POINT)

1. **WEBSITE** – Maintain a stormwater related page on the municipal website or on a municipal social media site. The web page may include links to other stormwater related resources, including the NJDEP stormwater website (www.njstormwater.org). (1 POINT)

Category 2 – Targeted Audiences Outreach (5 POINTS)

1. **STORMWATER DISPLAY** - Present a stormwater related display or materials at any municipal event (e.g., Earth Day, town picnic), at the municipal building or other similar public venue. (1 POINT)

   The Borough will coordinate a display at the Borough's Eatontown Community Day which is held either in September or October of each year at Wolcott Park.

2. **PROMOTIONAL ITEM** - Distribute an item or items with a stormwater related message (e.g., refrigerator magnets, temporary tattoos, key chains, bookmarks, pet waste bag dispensers, coloring books, and pens or pencils). Municipality must initially have available a minimum number of the items equal to 10% of the municipal population. (2 POINTS)

   The Borough will setup a table at the Borough's Eatontown Community Day which is held either in September or October of each year at Wolcott Park to distribute the DEP provided brochure and other educational materials provided by the NJDEP. During this event, Borough personnel will also distribute the following educational materials, which cover topics such as stormwater/nonpoint source pollution, storm drain inlet labeling, fertilizer/pesticide education, waste disposal, pet waste, litter, improper disposal of waste, wildlife feeding, and yard waste:

   - How Does Urbanization Change a Watershed?
   - Alternatives to Pesticide
   - Using Leaf Compost
   - Yard Trimmings Management Strategies in New Jersey
   - Home Composting
   - Vermicomposting
   - Minimizing Waste Disposal: Grass Clippings
   - Backyard Leaf Composting
   - What is Ground Water?
   - What is Nonpoint Source Pollution?
   - What's a Watershed?
   - Clean Water Raingers Coloring Book

- Clean Water Raingers Handbook
- NJ Clean Communities Litter Activity Book

3. **MAILING CAMPAIGN** - Distribute any of the Department's educational brochures, tip cards, or a municipally produced equivalent (e.g., community calendar, newsletter, or recycling schedule) via a mailing to every resident and business in the municipality. (2 POINTS)

   The Borough will distribute the NJDEP provided brochure to all residents and businesses along with one of its quarterly tax bills. Additional copies will be made available to the public at Borough Hall and posted on the Borough municipal website.

Category 3 – School / Youth Education Activities (3 POINTS)

1. **CLEAN UP** - Sponsor or organize a litter clean up for a scout troop, local school district, faith-based group or other community youth group along a local waterway, public park, stormwater facility, or in an area with storm drains that discharge to a local lake or waterway. (3 POINTS)

   The Borough will organize a municipality-wide cleanup held in either April or May of each year at Wampum Lake.

Category 4 – Watershed / Regional Collaboration (3 POINTS)

1. **GREEN INFRASTRUCTURE WORKSHOP** - Organize or participate in a rain barrel, rain garden or other green infrastructure workshop on a regional or watershed basis. This could be a partnership exercise with a local watershed organization, utility, university, school, youth/faith-based group, and/or other organization. (3 POINTS)

Category 5 – Community Involvement Activites (3 POINTS)

1. **RAIN BARREL WORKSHOP** - Organize or participate in a rain barrel workshop. This could be a partnership exercise with a local watershed organization, university, school, youth/faith-based group, and/or other nonprofit. (3 POINTS)

   The Borough will coordinate a workshop at the Community Garden.

NJDEP STORMWATER AND PET WASTE BROCHURES

Solutions to Stormwater Pollution
Pet Waste

Solutions to Stormwater Pollution

Easy Things You Can Do Every Day To Protect Our Water

A Guide to Healthy Habits for Cleaner Water

Pollution on streets, parking lots and lawns is washed by rain into storm drains, then directly to our drinking water supplies and the ocean and lakes our children play in. Fertilizer, oil, pesticides, detergents, pet waste, grass clippings: You name it and it ends up in our water.

Stormwater pollution is one of New Jersey's greatest threats to clean and plentiful water, and that's why we're all doing something about it.

By sharing the responsibility and making small, easy changes in our daily lives, we can keep common pollutants out of stormwater. It all adds up to cleaner water, and it saves the high cost of cleaning up once it's dirty.

As part of New Jersey's initiative to keep our water clean and plentiful and to meet federal requirements, many municipalities and other public agencies including colleges and military bases must adopt ordinances or other rules prohibiting various activities that contribute to stormwater pollution. Breaking these rules can result in fines or other penalties.

As a resident, business, or other member of the New Jersey community, it is important to know these easy things you can do every day to protect our water.

Limit your use of fertilizers and pesticides

- Do a soil test to see if you need a fertilizer.
- Do not apply fertilizers if heavy rain is predicted.
- Look into alternatives for pesticides.
- Maintain a small lawn and keep the rest of your property or yard in a natural state with trees and other native vegetation that requires little or no fertilizer.
- If you use fertilizers and pesticides, follow the instructions on the label on how to correctly apply it.

Make sure you properly store or discard any unused portions.

Properly use and dispose of hazardous products

- Hazardous products include some household or commercial cleaning products, lawn and garden care products, motor oil, antifreeze, and paints.
- Do not pour any hazardous products down a storm drain because storm drains are usually connected to local waterbodies and the water is not treated.

- If you have hazardous products in your home or workplace, make sure you store or dispose of them properly. Read the label for guidance.
- Use natural or less toxic alternatives when possible.
- Recycle used motor oil.
- Contact your municipality, county or facility management office for the locations of hazardous-waste disposal facilities.

Keep pollution out of storm drains

- Municipalities and many other public agencies are required to mark certain storm drain inlets with messages reminding people that storm drains are connected to local waterbodies.
- Do not let sewage or other wastes flow into a stormwater system.

Clean up after your pet

- Many municipalities and public agencies must enact and enforce local pet-waste rules.
- An example is requiring pet owners or their keepers to pick up and properly dispose of pet waste dropped on public or other people's property.
- Make sure you know your town's or agency's requirements and comply with them. It's the law. And remember to:
  - Use newspaper, bags or pooper-scoopers to pick up wastes.
  - Dispose of the wrapped pet waste in the trash or un-wrapped in a toilet.
  - Never discard pet waste in a storm drain.

Don't feed wildlife

- Do not feed wildlife, such as ducks and geese, in public areas.
- Many municipalities and other public agencies must enact and enforce a rule that prohibits wildlife feeding in these areas.

Don't litter

- Place litter in trash receptacles.
- Recycle. Recycle. Recycle.
- Participate in community cleanups.

Dispose of yard waste properly

- Keep leaves and grass out of storm drains.
- If your municipality or agency has yard waste collection rules, follow them.
- Use leaves and grass clippings as a resource for compost.
- Use a mulching mower that recycles grass clippings into the lawn.

Contact information

For more information on stormwater related topics, visit www.njstormwater.org or www.nonpointsource.org

Additional information is also available at U. S. Environmental Protection Agency Web sites www.epa.gov/npdes/stormwater or www.epa.gov/nps

New Jersey Department of Environmental Protection
Division of Water Quality
Bureau of Nonpoint Pollution Control
Municipal Stormwater Regulation Program
(609) 633-7021

www.cleanwaternj.org

Pet Waste Pollutes Our Waters

What You Can Do To Help Protect Our Water

Clean and plentiful water is important to our families, our environment, our economy and our quality of life.

Did you know that animal waste from pets can pollute our waters? When left on the ground, pet waste is washed by rain and melting snow and ice into storm drains that carry it to our rivers, lakes, the ocean and drinking water.

Animal waste contains a high concentration of nutrients as well as bacteria and disease-causing microorganisms that can cause problems.

What you can do

Pet owners or anyone who takes your pet for walks must properly dispose of the waste by picking it up, wrapping it and either placing it in the trash or flushing it unwrapped down the toilet.

Your municipality is required to adopt and enforce local pet-waste laws. At a minimum, your community must require that pet owners or their keepers **immediately** and **properly** dispose of their pet's solid waste deposited on **any public or private property not owned or possessed by that person.** People with assistance animals such as Seeing Eye dogs are exempt.

Make sure you know what your municipality requires – and follow it.

Thank you for doing your part to keep New Jersey's waters clean.

For more information, please contact the following:

New Jersey Department of Environmental Protection
Division of Water Quality
Bureau of Nonpoint Pollution Control
Municipal Stormwater Regulation Program
(609) 633-7021

Visit www.njstormwater.org or www.nonpointsource.org

Additional information is also available at U. S. Environmental Protection Agency Web sites www.epa.gov/npdes/stormwater or www.epa.gov/nps

Jon S. Corzine, Governor
Lisa P. Jackson, Commissioner

CLEAN WATER
It's Up to You New Jersey

SAMPLE ORDINANCE EDUCATION LETTER

[DATE]

RESIDENT
[ADDRESS LINE 1]
[ADDRESS LINE 2]

Re: Stormwater Management
Best Practices and Ordinance Education

Dear Resident,

You may not be aware that pollution on streets, parking lots and lawns is washed by rain into our storm drains, and into our drinking water supplies and oceans and lakes that we fish in and our children play in. Stormwater pollution is one of New Jersey's greatest threats to clean and plentiful water, and that's why we must all do something about it. By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater.

Stormwater management is not only critical to our environment, it is critical to our own health and well-being. As part of New Jersey's initiative to keep our water clean and plentiful and to meet federal requirements, the Borough is working with the New Jersey Department of Environmental Projection (NJDEP) in various initiatives to protect our water bodies.

One such initiative is the adoption of various stormwater related ordinances prohibiting various activities that contribute to stormwater pollution. A summary of these ordinances is listed below. Failure to comply can result in the assessment of fines or other penalties.

- Littering – This ordinance is provided to keep litter such as garbage, refuse, rubbish or other unconsumed substance or waste material from being washed into the municipal separate storm sewer system (MS4), where it would cause pollution of our waterways.

- Disposal of Pet Solid Waste – This ordinance is provided to keep pet feces or droppings from being washed into the Borough's MS4, where it would cause pollution of our waterways.

- Wildlife Feeding – This ordinance prohibits the feeding of unconfined wildlife in any public park or other property owned and operated by the Borough in order to keep wildlife from concentrating in small areas and their feces from causing pollution of our waterways.

- Garbage and Refuse Regulations – This ordinance outlines procedures and regulations for combustible waste to avoid the waste entering the Borough's MS4 and causing pollution of our waterways.

OTHER NJDEP EDUCATIONAL BROCHURES

How Does Urbanization Change a Watershed?
Alternatives to Pesticide
Using Leaf Compost
Yard Trimmings Management Strategies in New Jersey
Home Composting
Vermicomposting
Minimizing Waste Disposal: Grass Clippings
Backyard Leaf Composting
What is Ground Water?
What is Nonpoint Source Pollution?
What's a Watershed?
Clean Water Raingers Coloring Book
Clean Water Raingers Handbook
NJ Clean Communities Litter Activity Book

- Improper Disposal of Waste – This ordinance prohibits the spilling, dumping or disposal of materials other than stormwater in such a manner as to cause the discharge of pollutants into the Borough's MS4 system. Exceptions to this ordinance are listed and can include but not be limited to water line flushing and discharges from potable water sources, irrigation water, flow from firefighting activities, sidewalk, driveway and street wash water, etc.

- Illicit Connections to Storm Sewer System – This ordinance prohibits the illicit connection to the Borough's MS4 in order to protect public health, safety and welfare. This includes both residential and non-residential areas. Examples of prohibited materials include domestic sewage, industrial waste, non-contact cooling water, and process water.

Copies of these ordinances can be viewed or downloaded from the Borough's municipal website at https://eatontownnj.com/public-works/.

Very Truly Yours,

_____

Mayor Anthony Talerico Jr.
Borough of Eatontown

NJ Department of Environmental Protection
Division of Watershed Management
PO Box 418
Trenton, NJ 08625-0418
609-984-0058

WATER RESOURCE PROTECTION PRACTICES

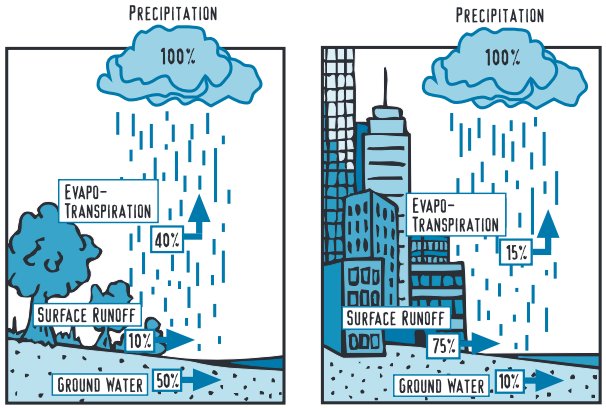
State of New Jersey
Christine Todd Whitman, Governor
Department of Environmental Protection
Robert C. Shinn, Jr., Commissioner

Printed on Recycled Paper
Reprinted March 1999

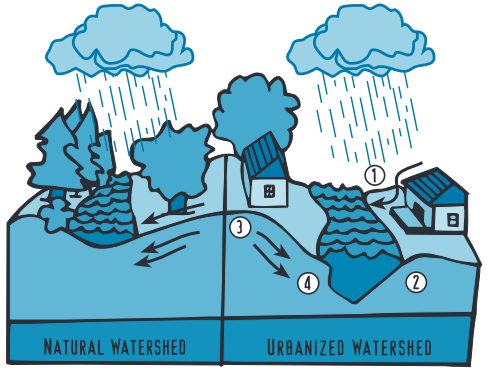
How does urbanization change a watershed?

Urbanization (or development) has a great effect on local water resources. It changes how water flows in the watershed and what flows in the water. Both surface and ground water flow are changed.

As a watershed becomes developed, trees, shrubs and other plants are replaced with impervious surfaces (roads, rooftops, parking lots and other hard surfaces that do not allow stormwater to soak into the ground). Without the plants to store and slow the flow of stormwater, the rate of stormwater runoff is increased. Less stormwater is able to soak into the ground because sidewalks, roads, parking lots and rooftops block this infiltration. This means a greater volume of water reaches the waterway faster and less of that water is able to infiltrate to ground water. This in turn leads to more flooding after storms but reduced flow in streams and rivers during dry periods. The reduced amount of infiltrating water can lower ground water levels, which in turn can stress local waterways that depend on steadier flows of water.

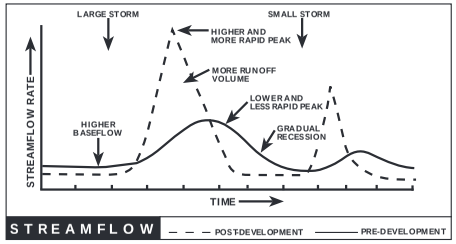


In the stream, more erosion of stream banks and scouring of channels will occur due to volume increase. This in turn degrades habitat for plant and animal life that depend on clear water. Sediment from eroded stream banks clogs the gills of fish and blocks light needed for plants. The sediment settles to fill in stream channels, lakes and reservoirs. This also increases flooding and the need for dredging to clear streams or lakes for boating.

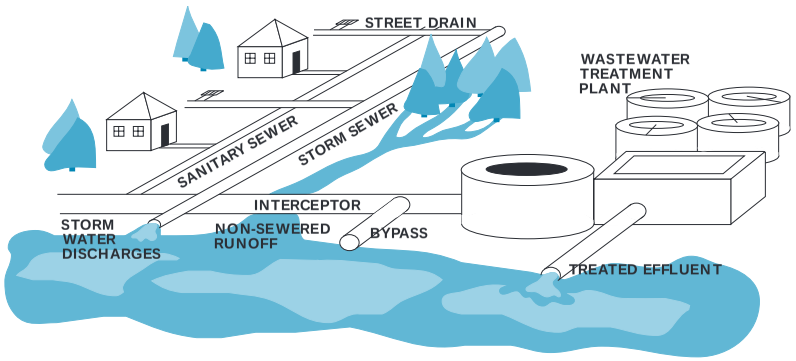


① INCREASED RUNOFF ② STREAMBANK EROSION ③ DECREASED INFILTRATION
④ DECREASED GROUND WATER FLOW TO STREAM

In addition to the high flows caused by urbanization, the increased runoff also contains increased contaminants. These include litter, cigarette butts and other debris from sidewalks and streets, motor oil poured into storm sewers, heavy metals from brake linings, settled air pollutants from car exhaust and pesticides and fertilizers from lawn care. These contaminants reach local waterways quickly after a storm.



Stormwater Sewer Basics



Stormwater flows into the stormwater system through a storm drain. These are frequently located along the curbs of parking lots and roadways. The grate that prevents larger objects from flowing into the storm sewer system is called a catch basin. Once below ground, the stormwater flows through pipes which lead to an outfall where the stormwater enters a stream, river or lake. In most areas of New Jersey, the stormwater sewer goes directly to local waterway without any treatment.

In some areas of the state, the outfall may lead to a stormwater management basin. These basins control the flow of stormwater and can also improve water quality, depending on how they are designed. These basins are frequently seen in newer commercial and residential areas.

In some older urban areas of the state, the stormwater and sanitary sewer systems may be combined. Here both stormwater and sewage from households and businesses travel together in the same pipes. Both stormwater and sewage are treated at sewage treatment plants except during heavy rains. During these occasions, both the stormwater and untreated sewage exceed the capacity of the treatment plant and this overflow is directed into local waterways.

Protecting Stormwater Sewers

In the first rush of water from a rainstorm, much of the debris and other pollutants that had settled on the land surface and in the stormwater sewer since the last storm will be picked up and carried into the local stream. This can significantly add to water quality problems. It is therefore important to protect the stormwater system from sources of pollution.

The following should never be dumped down storm drains, road gutters or catch basins: motor oil, pet waste, grass trimmings, leaves, debris and hazardous chemicals of any kind. Anything dumped in our stormwater collection systems will be carried into our streams.

Controlling Stormwater Flow

Managing stormwater to reduce the impact of development on local watersheds and aquifers relies on minimizing the disruption in the natural flow - both quality and quantity of stormwater. By designing with nature, the impact of urbanization can be greatly reduced.

This can be accomplished by following these principles:

- minimizing impervious surfaces;
- maximizing natural areas or areas of dense vegetation;
- structural stormwater controls such as stormwater management basins; and
- practicing pollution prevention by avoiding contact between stormwater and pollutants.

You Can Make a Difference in Your Own Backyard

Managing stormwater in your own backyard is important. As an integral part of the watershed you live in, what you do in your backyard makes a difference. Here are some examples of what you can do at home:

1. Reduce impervious surfaces by using pavers or bricks rather than concrete for a driveway or sidewalk.
2. Divert rain from paved surfaces onto grass to permit gradual infiltration.
3. Landscape with the environment in mind. Choose the appropriate plants, shrubs and trees for the soil in your yard; don't select plants that need lots of watering (which increases surface runoff), fertilizers or pesticides.
4. Maintain your car properly so that motor oil, brake linings, exhaust and other fluids don't contribute to water pollution.
5. Keep stormwater clean. Never dump litter, motor oil, animal waste, or leaves into storm drains or catch basins.

Alternatives to Pesticides

When planting a garden this year, consider using alternative methods to control pests, rather than chemical pesticides. Here are a few you might try.

HANDPICKING is time-consuming but unbeatable. Use gloves to remove visible offending insect and weed pests.

BARRIERS AND TRAPS - Barriers and traps are types of mechanical controls that can be employed to capture or impede pests.

COLLARS: To stop hatching larvae from burrowing into the soil surrounding your plants, use "collars" made of stiff paper, heavy plastic or tar paper. Cut a piece a foot square and fit snugly around the stem of the plant and press into the soil an inch or so deep. Use a paper clip to hold in place. This prevents cutworms and other burrowing insects from getting into the soil around your plants.

NETTING: Fine netting such as cheese cloth, placed over the bed, will protect seedlings from chewing insects, keep cats and birds away, and prevent flying insects from laying eggs.

COFFEE CAN TRAP**:** An effective technique for trapping non-flying insects is to bury a tin can in the bed of your garden so that the lip of the can is flush with the soil surface. Some bugs will fall in the can and be unable to get out. The can should be emptied often. This trap also collects beneficial insects and is a good way to monitor the insect population in your garden.

STICKY BOARD**:** A board or thick piece of paper painted yellow and coated with a sticky substance such as tanglefoot will attract and intercept aphids and other small flying insects.

TRAP PLANTS - Some insects, if given a choice, will opt to feed on one type of plant or another. For example: maggots prefer radishes over corn and tomato worms prefer dill over tomatoes. Therefore, certain plants can be strategically placed so that they lure harmful insects away from plants you wish to protect. These are commonly referred to as "trap plants." Once the trap plant has become infested, the target insect can be picked off and dropped in soapy water or the entire plant can be pulled up and disposed of.

BENEFICIAL INSECTS - It is important to recognize that not all insects in a garden are "pests." A garden and its surroundings contain many insects that are actually beneficial to the garden because they feed on insects that are harmful. Therefore, it is good to learn how to identify garden insects and determine whether they are harmful or beneficial. Many gardening books provide illustrations of the most common beneficial and harmful insects and will provide information on how to promote the population of beneficial insects such as ladybugs, bees, green lacewings, praying mantises, dragonflies, predacious mites and thrips, predacious wasps and spiders. Some companies such as seed catalogues sell beneficial insects by mail order.

COMPANION PLANTING - Some plants possess the natural ability to repel certain types of insects. Companion planting is the practice of strategically placing insect-repelling plants next to crops that will benefit from their natural properties. For example, planting garlic among vegetables helps fend off

Japanese beetles, aphids, the vegetable weevil, and spider mites; basil planted near tomatoes repels tomato horn worms; and marigolds interplanted with cucurbits (i.e., zucchini, cucumbers, etc.) discourage cucumber beetles.

CROP ROTATION - Planting different kinds of vegetables in each different section of your garden plot each year will help reduce pest infestation. In the fall, some insects lay their eggs in the soil a couple of inches below the surface. The eggs hatch in the spring and immediately begin the search for their food source. Many insects will feed on only one or types of vegetables. If the plant they prefer to eat is located several feet or yards away, the insect must migrate to the source. Many will die along the way or fall prey to birds and other insects. Also, certain families of plants (e.g., potatoes and peppers - nightshade family) attract the same pests.

In addition, many crops predominately absorb a particular nutrient from the soil. By rotating your crops each year, the soil in a particular section of the garden will have the opportunity to rest and regenerate.

DIVERSIFIED PLANTING - A common practice among home gardeners is to plant a single crop in a straight row. This encourages pest infestation because it facilitates easy travel of an insect or disease from one host plant to another. By intermingling different types of plants and by not planting in straight rows, an insect is forced to search for a new host plant thus exposing itself to predators. Also, this approach corresponds well with companion planting.

If you must use pesticides, consider the following:

LOW TOXICITY PESTICIDES - Formulated, biodegradable pest-control substances are commercially available. Although these products are pesticides, they have low toxicity to mammals and do not last long in the environment. The local County Extension Service can provide information on these and other pesticide products.

For more information, contact:

Ann R. Waters, Outreach Coordinator
Pesticide Control Program
CN 411, Trenton, NJ 08625
Phone: (609) 984-5014
Email: awaters@dep.state.nj.us

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FS117

Fact sheet

Using Leaf Compost

Roy L. Flannery, Specialist in Soils, Emeritus and
Franklin Flower, Specialist in Environmental Science, Emeritus

Composting involves primarily the microbial decomposition of organic matter. Compost - the end product - is a dark, friable, partially decomposed substance similar to natural organic matter found in the soil. The organic matter content of soils is very important. It influences the physical condition, water-holding capacity, and temperature of the soil, and especially the soil bacterial processes which affect the availability of mineral salts to plants.

Why Compost Leaves

If newly fallen leaves are added directly to the soil without first being composted, the microbes that decompose the leaves compete with growing plants for soil nitrogen. The temporary nitrogen shortage caused by the microbes can reduce plant growth. To reduce or eliminate this competition for nitrogen, composting of the leaves is recommended prior to incorporating them into soils.

Need for Organic Matter

Most New Jersey soils need an increase of 1/2 to 1% in organic matter. Sandy soils, such as loamy sands and sands, and soils with very high clay content are improved the most by an increase in organic matter content.

Benefits of Adding Leaf Compost to Soil

- Among the benefits derived from adding leaf compost to New Jersey soils are:
- Drought damage to plants is reduced because of an increased water-holding capacity of the soils.
- Soil tilth is improved making the soils easier to cultivate.
- Very small amounts of the 16 essential elements needed for plant growth are supplied.
- Adverse effects of excessive alkalinity, acidity, or over-fertilization are reduced by the added buffering of the soil.
- The cation exchange capacity of soils is increased, enabling the soils to hold more plant nutrients for longer periods.
- Decomposition of the organic matter produces organic acids which combine with iron and aluminum ions, thereby reducing their potential toxicity to plants. This also makes more phosphorus available for plants because free iron and aluminum can tie up the phosphates.
- The added organic matter provides a food source for desirable soil micro-organisms.
- When incorporated into the soil, or used in a thin mulch 1/16- to 1/8-inch thick, compost helps seeds to germinate.

Overall, compost improves the physical, chemical, and biological properties of soils. Leaf compost, however, is not normally considered a fertilizer as it is too low in nutrient content. It serves primarily as an organic amendment and a soil conditioner. The nitrogen content of composted leaves on a dry basis is about 1/2 to 1% by weight. For other materials commonly added to backyard leaf compost piles, the nitrogen content is: blood meal 10-14%; grass clippings 2-4%; coffee grounds 1 1/2-2%; eggshells 1-2%; horse manure 1-5%; cow manure 1-1 1/2%; poultry manure 3-5%; ammonium sulfate 20 1/2%; urea 45%; bone meal 1 1/2-4%; and cotton seed meal 6-7%.

When Compost is Ready to Use

When compost is ready to use (6 to l8 months after starting) its temperature will generally have decreased to slightly above air temperature. Finished compost will usually be drier than leaves during composting. The material also will be crumbly in texture. Before using compost, "screening" may be necessary to remove the larger partially decomposed materials. These materials will sometimes be present in composting piles because not all items decompose at the same rate. The undecomposed organic matter clumps may be broken up and added to another active compost pile for additional decomposition.

Adding Leaf Compost to the Soil

A good rate of organic matter to work into the top 6 1/2 to 7 inches of most New Jersey cultivated soils is 0.5 to 1.0% organic matter by weight. This is equivalent to adding 900 to 1,800 wet pounds (25 to 50 bushels) of leaf compost per 1,000 square feet of area. To accomplish this, spread a 3/8- to 3/4-inch depth of leaf compost uniformly over the soil surface and mix into the top 6 to 8 inches of soil.

Little or no nitrogen will be released from compost for plant use during the season immediately following incorporation into the soil. It is generally necessary to add nitrogen to soils containing compost to prevent the compost from "robbing" the soil of nitrogen and creating deficiency problems in plants grown in the soil. Adding 1 to 1 1/2 lbs. of 10% nitrogen fertilizer to each 100 lbs. (about 3 bushels) of leaf compost is recommended.

The preceding recommendations supply only the needs of the leaf compost. Most plants require an additional 1 to 3 lbs. of actual nitrogen per 1,000 square feet for normal feeding. This nitrogen should be applied to the soil in addition to that applied in the leaf compost.

Using Leaf Compost as a Mulch

Leaf compost can also be used as an organic mulch on the surface of soil in place of peatmoss, straw, etc. Organic mulches are valuable because they:

- Reduce rainfall runoff, thereby making more water available for plant growth.
- Decrease water evaporation losses from the soil.
- Keep the soils cooler in hot weather and warmer in cold weather.
- Reduce alternate freezing and thawing of soils which can injure the fibrous roots of plants.
- Help to prevent soil erosion by wind or water.
- Keep soils friable, therefore easier to cultivate.
- Increase biological activity of earthworms and other soil organisms.
- Prevent soil spattering on leaves, flowers, or fruits such as strawberries.
- Reduce soil compaction from rain and irrigation water.
- Help to control weeds.
- Present a pleasing appearance.

Recommended thicknesses of mulch layers: 2-3 inches for deciduous shrubs and trees, vegetables, and rosebeds; 3 inches for flower beds; and 3-4 inches for shallow-rooted, acid-loving plants.

Other Uses for Leaf Compost

Leaf compost may also be used in potting soil. However, no more than 25 to 30% of the potting soil should be leaf compost. Frequently leaf compost will continue to decompose. If more that 25 to 30% of the potting soil is leaf compost, there will be a significant volume reduction of the potting soil after 1 year.

Composting generally destroys most weed seeds contained in the compost material; however, not all of them will be destroyed. Some are heat resistant, and others will not be fully exposed to the high temperatures. If a completely pasteurized leaf compost is desired for potting soil, it will be necessary to heat it in an oven until the temperature of the center of the mass reaches 180°F and is maintained for 30 minutes.

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FS806

Fact sheet

Yard Trimmings Management Strategies in New Jersey

Jonathan H. Forsell, Agricultural and Resource Management Agent, Essex County

Introduction

Most yard debris consists of leaves, grass clippings, prunings, branches, trunks of trees, and their root systems. There are various options for managing these materials. The following are some guidelines to assist decision makers and others in determining best management strategies.

Materials Management Guidelines

Leaves: In New Jersey, leaves were banned from landfills, transfer stations, and incinerators in 1988. Collected leaves are generally composted at municipal, regional, commercial, or farm sites in large windrows (elongated piles) using the Leaf Composting Manual for New Jersey Municipalities as a guide. Municipal, regional, and private facilities can use a Type 1.11 simplified New Jersey Department of Environmental Protection (NJDEP) permit, if fewer than 20,000 cubic yards of leaves are composted annually, or a more detailed Type 2.1 permit, if the volume is greater.

Farmers can accept leaves for composting with the simplified permit if the volume is less than 20,000 cubic yards or can receive leaves to be mulched into the soil at no greater than a six-inch depth on the soil and within seven days from delivery without need of a permit. This requires that the leaves be incorporated into the soil no later than the next tillage season.

Backyard composting (household scale) is the most cost-effective method of leaf composting because of avoided collection costs, tipping fees, permits, equipment, and management costs. Refer to fact sheets FS074 and FS117. Further detailed information about composting and trimmings management can be obtained through Rutgers Cooperative Extension and the NJDEP, Bureau of Resource Recovery.

Grass Clippings: Ideally, lawns should be mowed frequently (about five-day intervals) removing only one-third of the grass blade. The clippings will biodegrade at the soil surface providing nitrogen and organic matter. Although any type mower may be used, mulching mowers or mulching attachments on traditional rotary machines can improve the results by chopping more finely. If clippings are long and clump on the lawn, the excess can be raked up and used as a nitrogen source in the backyard composting pile. Permits can be issued by the

NJDEP to include a limited volume of grass clippings in large-scale leaf composting facilities, but the rules are quite stringent to prevent odor problems, which are common, when grass is composting in an anaerobic (oxygen- deficient) environment. A one-year farm grass clippings demonstration permit is available to farmers from NJDEP to apply grass around seasonal crops under a nutrient management plan.

Prunings: Trimmings from trees, shrubs, hedges, and perennials are composted at some permitted facilities, but can also be composted in the backyard pile. A shredder-grinder is helpful to break down larger woody material to a more compostable size.

Tree Limbs: Limbs can be cut for firewood or chipped to make a mulch for landscape use. If finely ground, the product can be composted, but at a slower rate than leaves or grass clippings. Woodchips can be used as a carbon source, when composting sewage sludge.

Tree Trunks: Trunks are usually cut, split, and dried for use as firewood. Some desirable species are used to make furniture and cabinetry, and others are ground for mulch or pulp.

Tree Root Systems: Excavated tree roots are generally ground into mulch material. Massive root systems and trunks that are not made into firewood or mulch cannot be stockpiled at a site and are classified as Type 13 Bulky Waste, which must be hauled away for grinding or other processing.

Summary

Because yard trimmings are recyclable through composting or other means, it is prudent for government, businesses, farmers, and other people to avoid non-recycling avenues for managing this important fraction of the solid waste stream.

References

1. **Backyard Leaf Composting**, FS074, Franklin Flower and Peter F. Strom, Dept. of Environmental Science, Cook College.

2. **Grass—Cut It and Leave It**, NJDEP Division of Solid Waste Management, Office of Recycling, in cooperation with Rutgers Cooperative Extension. 1991.

3. **Leaf Composting Manual for New Jersey Municipalities**, Peter F. Strom and Melvin Finstein, Dept. of Environmental Science, Cook College and NJDEP. 1989.

4. **Using Leaf Compost**, FS117, Roy Flannery and Franklin Flower.

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FS811

Fact sheet

Home Composting

William T. Hlubik, Middlesex County Agricultural Agent; Jonathan Forsell, Former Essex County Agricultural Agent (deceased); Richard Weidman, Middlesex County Program Associate; and Mark Winokur, Former Program Assistant

What is Composting?

Composting is a natural process where organic materials decompose and are recycled into a dark, crumbly, earthy smelling soil conditioner known as "compost". Compost improves soil structure and moisture retention, and contributes to healthy plant growth by providing plant nutrients.

Why Should I Compost?

- Composting can save money!
- Reduces fertilizer and water use
- Avoids garbage collection and landfill fees
- Reduces the need for soil and plant amendments
- Composting helps the environment
- Reduces the volume of garbage going to landfills, transfer stations and incinerators
- Composting benefits your soil and plants
- Improves soil structure and texture
- Increases aeration and water holding
- Promotes soil fertility
- Stimulates healthy root development
- Aids in erosion control
- Reduces chemical inputs
- Composting is easy
- Save time bagging grass and leaves
- Quick and fun way to do part for the environment

Compost Ingredients

Do Compost:

- ✓ Vegetable food scraps
- ✓ Grass clippings
- ✓ Leaves
- ✓ Flowers
- ✓ Weeds
- ✓ Sawdust and wood ash
- ✓ Chopped twigs and branches
- ✓ Coffee grounds w/filters

Don't compost:

- × Meat scraps
- × Diseased or insect infested plants
- × Weeds with seeds
- × Dog and Cat feces
- × Food with grease or soap residues

Composting Methods

Slow Harvest: Ready in 12-18 Months

Made by adding layers of available yard waste over several months.

1. Set compost bin where is will get rain.
2. Put yard waste in bin as it is generated in your yard. The material at the bottom and in the center will compost first.

Fast Harvest: Ready in 5-15 Weeks

Made by mixing equal weights of green and brown materials at once.

1. Add green materials such as grass clippings or vegetable scraps mixed with brown materials such as leaves (no woody-type materials should be included).
2. Add water to pile until it's as wet as a wrung out sponge.
3. Turn pile with a pitch fork or compost aerator tool twice a week for faster compost production (less often in wintertime).

Types of Compost Bins

Compost can be made in open piles. However, to help keep a pile neat and maintain conditions needed for rapid decomposition, consider simple homemade or store bought bins. See back page for demonstration sites in New Jersey.

Homemade Bins:

- Made from wood pallets
- Made from snow fences

Store Bought:

- Compost Tumbler
- Durable Plastic Bin

Troubleshooting

Here is how to solve problems should they occur:

Symptom	Problem	Solution
Pile has a rotten odor	Not enough air	Turn pile
Pile has ammonia odor	Too many greens	Add brown material like leaves/straw
Pile is dry	Not enough water; too much woody material	Turn and moisten; add fresh greens
Low pile temperature (pile is not composting)	Pile is too small	Add new materials
	Insufficient moisture	Add water
	Poor aeration	Turn pile
	Lack of nitrogen	Mix in greens like grass or food scraps
	Cold weather	Insulate pile with layer of straw or cover with tarp
Pests (rats, raccoons, insects)	Presence of meat or fatty food scraps	Remove from pile

Keys to Good Compost

Water: The microorganisms in the compost pile need water to live. Water pile only as needed, to maintain compost as moist as a wrung out sponge. Don't let your pile dry out completely.

Nutrients: The microorganisms in the pile need carbon for energy and nitrogen for protein in order to survive. A good balance can be achieved by mixing two parts of nitrogen rich green materials such as grass clippings, with one part of carbon rich brown materials such as leaves. However, carbon-rich leaves by themselves will compost.

Aeration: To speed up decomposition, turn the pile frequently using a pitch fork. This provides the microorganisms with enough oxygen to thrive so they can heat up the compost. Placing large branches at the bottom of the pile will also help add air to the pile. Minimal turning would be once per month and less frequently during the year.

Surface area: The more surface area the microorganisms have to work on, the faster materials will decompose. Consider chopping materials, particularly brush or branches which have a diameter of ¼ inch or more. Pile size is also important. For quicker decomposition, pile should be at least 3 feet x 3 feet to hold the heat of microbial activity, but not so large (larger than 5 feet x 5 feet) that air can't reach microbes at the center of the pile.

Use for Compost

Mulch: Spread compost around flower and vegetable plantings, trees, shrubs, and on exposed slopes. This will smother weeds, keep plant roots moist, and prevent soil erosion.

Soil Conditioner: Mix 1-3 inches of compost into vegetable and flower beds before planting. This returns organic matter to the soil in a usable form.

Potting Mix: Make your own mix by using equal parts of compost and sand or soil. Make sure compost is fully decomposed and screened.

Resources

Some books to help you along…

Backyard Composting, Harmonious Technologies, P.O. Box 1865-100 Ojai, CA 93024

How to Grow More Vegetables, John Jeavons, Ecology Action, 5798 Ridgewood Rd. Willits, CA 09590

Let it Rot, Stu Campbell, Storey Communications, Inc., Schoolhouse Rd., RD #1, Box 105, Pownal, VT 05261

The Rodale Guide to Composting, R.A. Simpson, Rodale Press, 33 E. Miner St., Emmaus, PA 18098

Worms Eat My Garbage, Mary Appelhof, Flower Press, 10322 Shaver Rd., Kalamazoo, MI 49002

For additional information on composting or where to get compost materials, call your Rutgers Cooperative Extension county office, found in the telephone directory blue pages, under "County Government" or your county recycling office.

Compost Deconstruction Areas

These areas in New Jersey have various types of compost bins on display. Call ahead for hours and when tours or workshops are given.

Atlantic County
Atlantic County Utilities Authority Geo Garden
6700 Delilah Rd.,
Egg Harbor Township, NJ
Contact: (609) 646-6600

Burlington County
Burlington County Resource Recovery Geo Garden Complex, Rt 543,
Border of Florence and Mansfield Township
Contact: (609) 499-5210

Mazza & Sons, Inc. Recycling Facility
3230 Shafto Rd.,
Tinton Falls, NJ
Contact: (732) 922-9292

Middlesex County
Davidson's Mill Pond Park, Riva Avenue, South Brunswick, NJ
Contact: (732) 745-3443

Monmouth County
Deep Cut Park, Red Hill Rd.,
Middletown, NJ
Contact: (732) 842-4000

Morris County
Frelinghuysen Arboretum, 53 E. Hanover Ave.,
Morris Township, NJ
Contact: (973) 326-7600

Passaic County
Passaic County Office of Recycling
1310 Rt. 23 N,
Wayne, NJ
Contact: (973) 305-5734

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FS805

Fact sheet

Vermicomposting
(Worm Composting)

Jonathan H. Forsell, Agricultural/Resource Management Agent, Essex County

Kitchen wastes, such as fruits, vegetables, coffee grounds, tea bags, and eggshells, are a part of the solid waste stream. Most of this material is disposed of as garbage at transfer stations, landfills, and incinerators at a high economic and environmental cost to citizens. A positive alternative is to compost kitchen scraps using red worms to make a valuable compost for use as a soil amendment or as a starter mix for house plants or seedlings. **Note**: Avoid meats, oils, and grease in the compost system.

Worm composting is enjoyable, and it demonstrates the natural process of decompostion and the life cycle of the organisms involved.

Materials

- A worm bin can be made from an old dresser drawer, a 5-gallon plastic bucket, or from wood. A wooden box should be approximately 2 ft. X 2 ft. X 8 in. high. Do not use cedar, as it is toxic to the worms.

- Bedding material: shredded, moist newspaper, cardboard, and/or leaf compost.

- Watering can or container to provide water for the system.

- Red worms (Eisenia foetida) 1 pound. They can be ordered from:

  Flowerfield Enterprises
  10332 Shaver Road
  Kalamazoo, MI 49002

  Lower East Side Ecological Center
  P. O. Box 20488
  New York, NY 10009

Procedure

1. Shred newspapers or cardboard or use leaf compost. Moisten this material and place it in the bin loosely to provide for air circulation.

2. Add 1 lb. of red worms to the bin. They will crawl to the bottom of the bedding material to avoid the light.

3. Place food scraps except animal products (meats, greases, etc.) under the bedding. The worms can consume 3 to 3 1/2 lbs. of kitchen waste per week while making vermicompost.

4. Keep the bin covered loosely with plastic or newspaper to retain moisture. The box should be checked every day or two

for moisture. When the surface or edges of the bedding begin to dry, add water.

Summary

The process takes about 3 to 4 months to produce a finished vermicompost product, which looks like brown coffee grounds. The compost consists of worm castings, partially decomposed kitchen waste, and some undecomposed bedding. The worms eat not only the food, but also the newspaper or other bedding. Vermicompost can be mixed into garden soil to improve structure and to provide nutrients, can be used as mulch, or as a potting soil mix.

To separate the compost, place it on a table under lights. The worms will go to the bottom of the pile away from the light. Remove the finished compost and start the process over again. Because the worms have reproduced, you can separate out the surplus and start a new box. Always keep the bin at a temperature above freezing and below 95° F. The bin should be kept indoors in winter, but can be placed in the shade in summer. Stop feeding for several days or weeks before ready to use.

References

Appelhof, Mary. 1982. Worms Eat My Garbage. Flower Press, Kalamazoo, MI.

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FS389

Fact sheet

Minimizing Waste Disposal: Grass Clippings

Peter F. Strom, Ph.D., Associate Professor of Environmental Science; James A. Murphy, Ph.D., Specialist in Turfgrass Management; and Henry W. Indyk, Ph.D., Specialist Emeritus in Turfgrass Management

Since refuse disposal costs have dramatically increased, and some landfills no longer accept grass clippings, many individuals and governmental agencies are seeking alternatives for disposal of clippings. During the maximum grass growing period, the municipal refuse load in some New Jersey suburban communities may contain nearly one-third grass clippings. Collected clippings become anaerobic very quickly because of their high demand for oxygen. After becoming anaerobic they emit strongly unpleasant odors. Therefore, grass clippings (in quantity) are difficult to handle and to process.

From our own experience with the handling and disposal of grass clippings, and discussions with others such as lawn care professionals, we suggest considering the following methods to reduce landfilling:

1. RETURN TO LAWN — It is most desirable to leave grass clippings uncollected on the lawn so that they are recycled, contributing to soil organic matter and supplying part of the fertilizer needs of the lawn. Adopt a mowing schedule to keep clippings short enough to filter through growing grass and not remain as a mat on top of the lawn. Research and experience indicate that only 1/3 of the grass length should be removed during mowing. Never allow the lawn grass to double its height between mowings. This approach not only eliminates clipping collection and disposal problems, but also can contribute to improvement of the lawn.

Clippings are <u>not</u> a cause of thatch in lawns. Rather, thatch is formed primarily from a dense accumulation of grass roots and stemmy material. Returning clippings along with proper mowing frequency will not increase disease problems.

Use caution when removing collection bags from mowers. Some machines are not designed to operate safely without a bag or other attachment in place. If you are unsure, check with your equipment supplier.

2. GARDEN MULCH — Grass clippings can be used as a garden mulch. To minimize any tendency to protect slugs, clippings can be dried in the sun for a day prior to being used in this way. Clippings can be spread on garden soil to check weed growth, reduce soil spattering and crusting, moderate soil temperatures, etc. As a precaution, do not use grass clippings from herbicide-treated lawns until after two grass cuttings have been made.

3. SOIL INCORPORATION — Clippings can serve as a source of organic matter for soil improvement when incorporated into the garden.

4. BACKYARD COMPOSTING — Grass clippings can be composted, particularly when incorporated into a backyard leaf composting pile. However, grass has a high nitrogen content, a much higher demand for oxygen than leaves, and a tendency to mat, thereby greatly reducing the passage of oxygen. Composting piles containing

grass clippings thus readily become anaerobic. This, in turn, can produce strong, unpleasant odors. These odors are particularly noticeable when the pile is disturbed.

Because of these problems, grass clippings should not be composted alone, but rather mixed with composting leaves. The partially decayed leaves which now (6-9 months after leaf fall) have a low demand for oxygen, will serve as a bulking agent permitting more oxygen to reach the grass. Grass, which is high in nitrogen, will provide a more rapid decomposition of the remaining leaves as long as it remains under aerobic conditions. Grass clippings will also contribute to a better end product (higher nitrogen content) than that obtained from composting leaves alone. One must be aware, however, that an excess of damp grass in the pile will soon become anaerobic, produce very unpleasant odors, and reduce the rate of decomposition. The objective is to keep the material **aerobic**. Also, to ensure that excess nitrogen is not given off as ammonia, do not add more than 1 part fresh grass clippings to 3 parts partially composted leaves.

The resulting compost can be used as a soil amendment, as a mulch for gardens, flower or shrub beds, or as a potting medium.

5. MUNICIPAL COMPOSTING — Some grass clippings can be incorporated into a municipal leaf composting operation. However, problems that may be experienced with backyard grass composting could be greatly magnified at a municipal facility. Even grass stored for one day or less in plastic bags or the back of a lawn maintenance pick-up truck may emit very unpleasant odors when being unloaded at the site. For this reason, grass clippings are banned at many leaf composting facilities, unless they are very isolated. Research is continuing in this area, but other problems include the high cost of collection and an inadequate supply of leaves for the amount of clippings.

Partially composted leaves should be mixed with the grass in a 3:1 ratio, or more. Because the leaves have already decomposed by the time the grass comes to the site, however, this means the ratio actually collected must be at least 6:1. For most towns this would be possible only if most of the grass clippings are handled directly by residents on their own property.

6. CLIPPING REDUCTION — Fertilizing and watering above the requirements of the grasses may be more detrimental than beneficial to the lawn. One of the effects is increased production of clippings. (Another is potential ground or surface water pollution.) Judicious and proper use of fertilizer and water can provide an attractive lawn with a reduction in the costs, effort, susceptibility to disease, and amount of clippings produced. A fertilization program should emphasize fertilizing the lawn in the fall season rather than in the spring. This can be effective not only in reducing the amount of clippings produced, but also in contributing to a better lawn.

Two related fact sheets: “Backyard Leaf Composting” (FS074) and “Using Leaf Compost” (FS117), and assistance with procedures covered above, may be obtained from the Rutgers Cooperative Extension office in your county. The telephone number appears under County Government in your local phone directory.

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THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS COOPERATIVE EXTENSION
New Jersey Agricultural Experiment Station
www.rce.rutgers.edu

FS074

Fact sheet

Backyard Leaf Composting

Franklin Flower, Extension Specialist Emeritus in Environmental Science
Peter Strom, Assistant Professor in Environmental Science

Many New Jersey homeowners have an excessive quantity of leaves in the fall. One alternative for deal-ing with leaves is backyard composting. This process involves primarily the microbial decomposition of organic matter. Compost - the end result - is a dark, friable, partially decomposed substance similar to natural organic matter found in the soil.

The Composting Process

Composting speeds natural decomposition under semi-controlled conditions. Raw organic materials can be converted into compost by microorganisms. As microorganisms decompose organic matter, temperatures within the pile increase, sometimes approaching l50 degrees F. at the center. These inside-pile temperatures speed the process, and kill many weed and disease organisms.

Leaves may be composted by piling them in a heap. Locate the pile where drainage is adequate and there is no standing water. The composting pile should be damp enough that when a sample taken from the interior is squeezed by hand a few drops of water will appear. A shaded area will reduce moisture evaporation from the surface, but tree roots may grow into the pile. If the surface of the pile becomes excessively dry, it will not compost, and those leaves may blow away.

The leaf pile should be at least 4 feet in diameter and 3 feet in height. If it is too small, it is difficult to maintain adequate temperatures for rapid decomposition. The maximum size should be about 5 feet in height and l0 feet in diameter. If the pile is too large, the interior will not obtain the oxygen needed for adequate, odor-free decomposition. If more material is available, lengthen the pile into a rectangular shape while keeping it l0 feet wide and 5 feet high. If there is sufficient space and material, two or three piles will provide greater flexibility. One pile can contain compost for immediate use; the second is actively composting; and the third receives newly fallen leaves. If there is space for only one pile, new material may be added gradually to the top while removing the decomposed product from the bottom.

Containing the Pile

Composting may be done in a loose pile. However, for the most efficient use of space, it can be contained in a bin or other enclosure. The sides of this bin should be loose enough to permit air movement. One side should be open, or easily opened, for turning the pile and for removing the finished compost.

Woven wire or wooden slat fencing, or cement blocks on their sides have been used successfully. Wood gradually decomposes, and wire fencing may rust, so these materials will need periodic replacement. Wooden stakes driven into the ground may attract termites, so lumber treated with wood preservative or metal snow-fence posts may be better.

Constructing the Pile

Many instruction sheets advocate constructing the pile in layers that may include grass clippings, fertilizer, limestone, manure, soil, and leaves. However, we have found this practice to be unnecessary. The pile can be constructed of leaves only. A small amount of grass clippings may be added to the leaves as the pile is being constructed. However, because of its high demand for oxygen, too much grass tends to cause an anaerobic (without oxygen) condition. This greatly reduces the composting rate, and can produce unpleasant odors. Fresh vegetable peelings may be included, but do not add meat or grease because they may cause odors or attract pests.

Unless leaves are collected in a very wet condition, add water while placing them in the pile. Without moisture, the microorganisms will not function. Moist-en to the point

where it is possible to squeeze droplets of water from a hand-held mass of leaves.

Dead leaves lack adequate nitrogen for rapid decomposition. Therefore, a high-nitrogen fertilizer added to the pile may speed up decomposition. However, since leaves fall only for about 2 months a year, there are l0 months for decomposition before space is needed for the next batch. So, while it is generally unnecessary to add fertilizer, for more rapid decomposition and a product with a higher nutritive content, 5 ounces (about 1/2 cup) of 10% nitrogen fertilizer per 20-gallon can of hand-compacted leaves could be added. Fresh manure could be substituted, but it may cause odor problems.

Ordinarily it is unnecessary to add ground limestone because the pile seldom becomes too acidic. If fertilizer has been added, an equivalent quantity of limestone will counteract any acidity. Little or no limestone should be added if the compost is to be used on acid-loving plants.

Some guides on leaf composting recommend adding layers of soil periodically to the piles to supply the microorganisms needed for decomposition. We have not found this practice to be necessary, because leaves, themselves, contain a multitude of microorganisms. Available commercial activators or starters definitely are not needed.

Avoid packing the materials too tightly. Too much compaction will limit movement of air through the pile. Shredding the leaves generally speeds up composting.

To reduce weed germination, weeds in flower or with seeds should not be composted. Also, it is best to avoid composting diseased plants, or herbicide-treated lawn clippings until after at least three mowings.

Care of the Pile

The composting pile must be kept moist, but not soggy, for proper decomposition. Inadequate moisture reduces microbial activity, while excessive water may cause anaerobic conditions. A thin outer layer of dry leaves is unavoidable.

The pile should be periodically turned or mixed. The main objectives of turning are to shift materials from the outer parts of the pile closer to the center for better decomposition, and to incorporate oxygen. During warm weather, turn the pile once a month. In cool weather frequent turning is not recommended because it allows too much heat to escape. Piles should be turned immediately if ammonia or other offensive odors are detected. If space is available, turning may be accomplished by shifting the entire pile to an adjacent area or bin.

Within a few weeks after starting, the pile should be hot in the center. Heating generally indicates that the pile is decomposing properly. Failure to heat may be caused by too little or too much water, improper aeration, packing too tightly, or a pile that is too small. As leaves decompose, they should shrink to less than one-half of their original volume. During dry weather it may be necessary to add more water. The moisture content of the interior of the pile should be observed while turning.

Using Leaf Compost

Finished compost should be dark and crumbly with much of the original appearance no longer visible. It should have an earthy odor. Normally, compost will be ready in 4-9 months.

The major horticultural use for leaf compost is to improve the organic content of soil. Most New Jersey soils need an increase of 1/2 to 1% in organic content, particularly to improve moisture-holding capacity and tilth. Leaf compost is not normally a fertilizer, because it is too low in nutrients. Compost serves primarily as an organic amendment and as a soil conditioner. Soil mulch is another valuable use for leaf compost.

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NJ Department of Environmental Protection
Division of Watershed Management
PO Box 418
Trenton, NJ 08625-0418
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WATER RESOURCE PROTECTION PRACTICES

State of New Jersey
Christine Todd Whitman, Governor
Department of Environmental Protection
Robert C. Shinn, Jr., Commissioner

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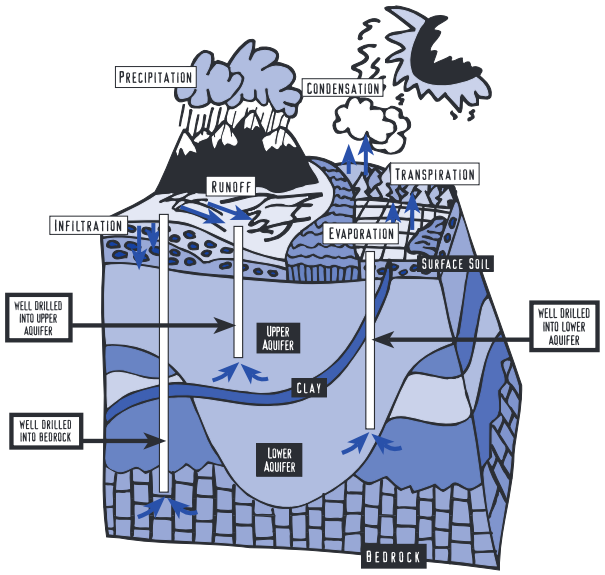
WHAT IS GROUND WATER?

Where does the water that rains on your home go? After it leaves your lawn, street or sidewalk, where is it headed? Does it wander into a wetlands? Does it puddle in your backyard? Does it zip down a sink hole? If it soaks into the ground, it becomes ground water.



A sizable amount of rainwater runoff seeps into the ground to become ground water. Ground water moves into water-filled layers of porous geologic formations called aquifers. If the aquifer is close to the surface, its ground water can flow into nearby waterways or wetlands, providing a base flow. Depending on your location, aquifers containing ground water can range from a few feet below the surface to several hundred feet underground. Aquifer recharge areas are locations where rainwater and other precipitation seeps into the earth's surface to enter an aquifer. Contrary to popular belief, aquifers are not flowing underground streams or lakes.

Ground water moves at an irregular pace, seeping from more porous soils, from shallow to deeper areas and from places where it enters the Earth's surface to where it is discharged or withdrawn. A system of more than 100 aquifers is scattered throughout New Jersey, covering 7,500 square miles.

WHY IS GROUND WATER IMPORTANT?

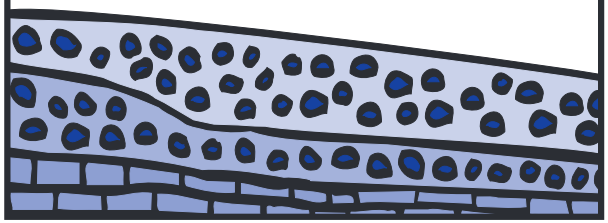
Ground water is the primary drinking water source for half of the state's population. Most of this water is obtained from individual domestic wells or public water supplies which tap into aquifers. New Jersey agriculture also depends on a steady supply of clean ground water for irrigation.

GROUND WATER COMPLICATIONS

Humans have an impact on ground water in a number of ways. One way people influence ground water is by changing where stormwater flows. By changing the contour of the land and adding impervious surfaces such as roads, parking lots and rooftops, people change how and where water goes. When it rains, the stormwater in a developed area is less able to soak into the ground because the land is now covered with roads, rooftops and parking lots. Less ground water will be recharged and more water will flow directly into streams and rivers.

Another way people affect ground water is by adding potential pollution sources. How the land above ground water is used by people, whether it is farms, houses or shopping centers, has a direct impact on ground water quality. As rain washes over a parking lot, it might pick up road salt and motor oil and carry these pollutants to a local aquifer. On a farm or suburban lawn, snow melt might soak fertilizers and pesticides into the ground.

When properly used, the amount of ground water pumped out for human purposes is less than what nature supplies to recharge the aquifer. If overused, more water is pumped out than is recharged. With less ground water in the aquifer, it becomes more difficult to use and more susceptible to pollution and salt water intrusion.

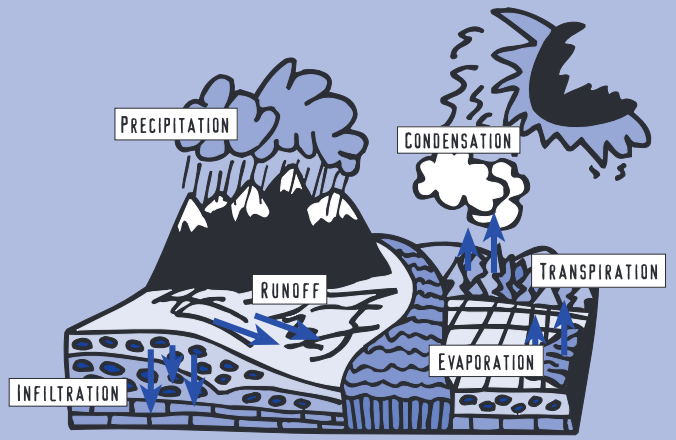


WATER CONSERVATION

Conserving water through efficient water use can help prevent pollution. Using less water reduces the runoff of agricultural pollutants pesticides and fertilizers. Diverting less water from waterways or aquifers leaves more water in streams or lakes, protecting existing ecosystems such as wetlands (which absorb certain types of pollution) and water supplies.

Water conservation can also save money by reducing pumping and treatment costs both before water reaches your home and after it leaves. Reduced water use may extend the life of existing sewage treatment facilities. It can also eliminate the need to develop a new water supply. New wells and reservoirs are expensive and time consuming to locate and build.

THE WATER CYCLE



For millions of years, water has been used. It is constantly being recycled and reused. It is important to understand how water moves through the Earth's water cycle, which is defined as the movement of water from the Earth's surface into the atmosphere and back to the Earth's surface again.

When it rains, the rainwater flows overland into waterways or is absorbed by the ground or plants. Water evaporates from land and water bodies, becoming water vapor in the atmosphere. Water is also released from trees and other plants through "transpiration." The water vapor from evaporation and transpiration forms clouds in the atmosphere which in turn provide precipitation (rain, hail, snow, sleet) to start the cycle over again. This process of water recycling, known as the water cycle, repeats itself continuously.

What is Nonpoint Source Pollution?

Nonpoint Source Pollution, or people pollution, is a contamination of our ground water, waterways, and ocean that results from everyday activities such as fertilizing the lawn, walking pets, changing motor oil and littering. With each rainfall, pollutants generated by these activities are washed into storm drains that flow into our waterways and ocean. They also can soak into the ground contaminating the ground water below.

Each one of us, whether we know it or not, contributes to nonpoint source pollution through our daily activities. As a result, nonpoint source pollution is the BIGGEST threat to many of our ponds, creeks, lakes, wells, streams, rivers and bays, our ground water and the ocean.

The collective impact of nonpoint source pollution threatens aquatic and marine life, recreational water activities, the fishing industry, tourism and our precious drinking water resources. Ultimately, the cost becomes the burden of every New Jersey resident.

But there's good news - in our everyday activities we can stop nonpoint source pollution and keep our environment clean. Simple changes in YOUR daily lifestyle can make a tremendous difference in the quality of New Jersey's water resources. Here are just a few ways you can reduce nonpoint source pollution.

LITTER: Place litter, including cigarette butts and fast food containers, in trash receptacles. Never throw litter in streets or down storm drains. Recycle as much as possible.

FERTILIZERS: Fertilizers contain nitrates and phosphates that, in abundance, cause blooms of algae that can lead to fish kills. Avoid the overuse of fertilizers and do not apply them before a heavy rainfall.

PESTICIDES: Many household products made to exterminate pests also are toxic to humans, animals, aquatic organisms and plants. Use alternatives whenever possible. If you do use a pesticide, follow the label directions carefully.

HOUSEHOLD HAZARDOUS PRODUCTS: Many common household products (paint thinners, moth balls, drain and oven cleaners, to name a few) contain toxic ingredients. When improperly used or discarded, these products are a threat to public health and the environment. Do not discard with the regular household trash. Use natural and less toxic alternatives whenever possible. Contact your County Solid Waste Management Office for information regarding household hazardous waste collection in your area.

MOTOR OIL: Used motor oil contains toxic chemicals that are harmful to animals, humans and fish. Do not dump used motor oil down storm drains or on the ground. Recycle all used motor oil by taking it to a local public or private recycling center.

CAR WASHING: Wash your car only when necessary. Consider using a commercial car wash that recycles its wash water. Like fertilizers, many car detergents contain phosphate. If you wash your car at home, use a non-phosphate detergent.

PET WASTE: Animal wastes contain bacteria and viruses that can contaminate shellfish and cause the closing of bathing beaches. Pet owners should use newspaper, bags or scoopers to pick up after pets and dispose of wastes in the garbage or toilet.

SEPTIC SYSTEMS: An improperly working septic system can contaminate ground water and create public health problems. Avoid adding unnecessary grease, household hazardous products and solids to your septic system. Inspect your tank annually and pump it out every three to five years depending on its use.

BOAT DISCHARGES: Dumping boat sewage overboard introduces bacteria and viruses into the water. Boat owners should always use marine sanitation devices and pump-out facilities at marinas.

As you can see, these suggestions are simple and easy to apply to your daily lifestyle. Making your commitment to change at least one habit can result in benefits that will be shared by all of us and add to the health and beauty of New Jersey's water resources.



What's a watershed?

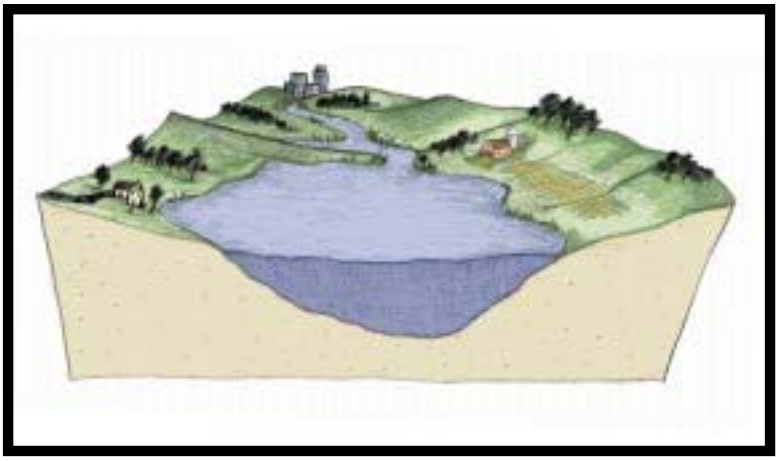
No matter where you are in New Jersey, you are in a watershed. Watersheds are everywhere ... from your front doorstep to the local park to the shopping mall to the creek down the road. Watersheds are the link between our land, our water and our communities because the quality of our water is linked to how we use the watershed surrounding it.

So what is a watershed?





What's a watershed?



A watershed is the area of land that drains into a body of water such as a river, lake, stream or bay. It is separated from other watersheds by high points in the area such as hills or slopes. It includes not only the waterway itself but also the entire land area that drains to it. For example, the watershed of a lake would include not only the streams entering that lake but also the land area that drains into those streams and eventually the lake. Drainage basins generally refer to large watersheds that encompass the watersheds of many smaller rivers and streams.

What's the water cycle?

For millions of years, water has been used. It is constantly being recycled and reused. It is important to understand how water moves through the Earth's water cycle, which is defined as the movement of water from the Earth's surface into the atmosphere and back to the Earth's surface again.

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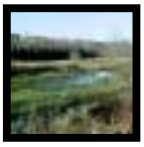
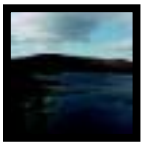
What's your watershed address?

Where does the water that rains on your home go? After it leaves your lawn, street or sidewalk where is it headed? Does it flow downhill straight to a nearby stream or lake? Does it wander into a wetlands? Does it puddle in your backyard? Does it zip down a storm drain to a local creek?

That destination, whether it's a puddle, a pond, a bay or a lake, is your watershed address. It could be Duck Pond, Spring Lake, Millstone River, Barnegat Bay or Beaver Brook. Just like there are towns within counties within states, there are subwatersheds within watersheds within drainage basins. For example, the rain that falls on your driveway might flow into Lake Hopatcong, which flows into the Musconetcong River, which flows into the Delaware River. So your watershed address would be Lake Hopatcong, Musconetcong River, Delaware River even though your mail finds you through Jefferson Township, Morris County, New Jersey.





What's ground water?

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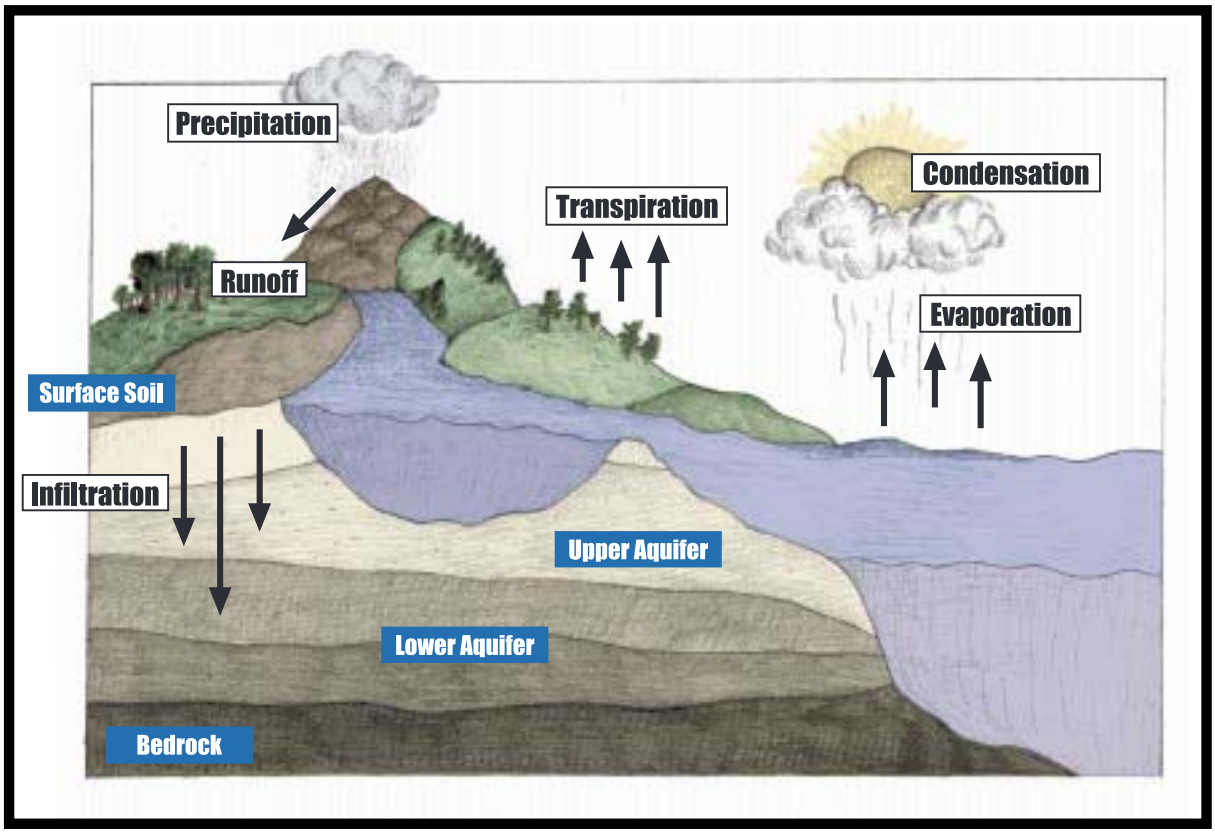


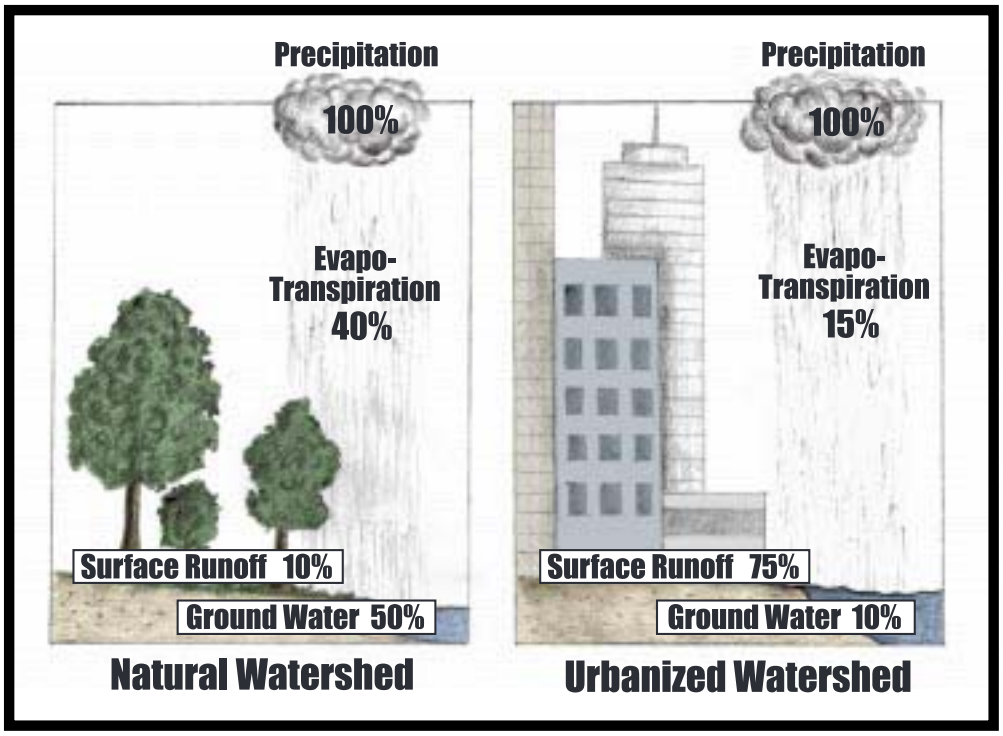
How does urbanization change a watershed?

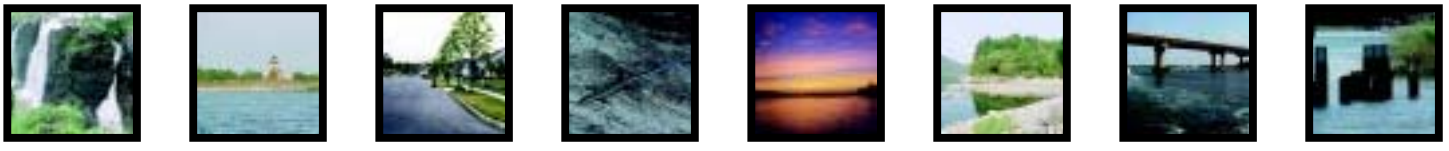
Urbanization (or development) has a great effect on local water resources. It changes how water flows in the watershed and what flows in the water. Both surface and ground water flow are changed.

As a watershed becomes developed, trees, shrubs and other plants are replaced with impervious surfaces (roads, rooftops, parking lots and other hard surfaces that do not allow stormwater to soak into the ground). Without the plants to store and slow the flow of stormwater, the rate of stormwater runoff is increased. Less stormwater soaks into the ground because the sidewalks, roads, parking lots and rooftops block this infiltration. This means a greater volume of water reaches the waterway faster and less water infiltrates to ground water. This in turn leads to more flooding after storms and reduced flow in streams and rivers during dry periods. The reduced amount of infiltrating water can lower ground water levels, which in turn can stress local waterways that depend on steadier flows of water.

In the stream, more erosion of stream banks and scouring of channels will occur due to volume increase. This in turn degrades habitat for plant and animal life that depend on clean water. Sediment from eroded stream banks clogs the gills of fish and blocks light needed for plants. The sediment settles to fill in stream channels, lakes and reservoirs. This also increases flooding and the need for dredging to clear streams or lakes for boating.

In addition to the high flows caused by urbanization, the increased runoff also contains increased contaminants. These include litter, cigarette butts and other debris from sidewalks and streets, motor oil poured into storm sewers, heavy metals from brake linings, settled air pollutants from car exhaust and pesticides and fertilizers from lawn care. These contaminants reach local waterways quickly after a storm.





What's watershed management?

The watershed management approach seeks to effectively protect our water resources by taking into account the entire watershed. Successful watershed management requires the participation and involvement of the entire community within the watershed boundaries, including industry, government, business and citizens. Since everyone may contribute to watershed problems, all should be involved in identifying both the problems and the solutions.

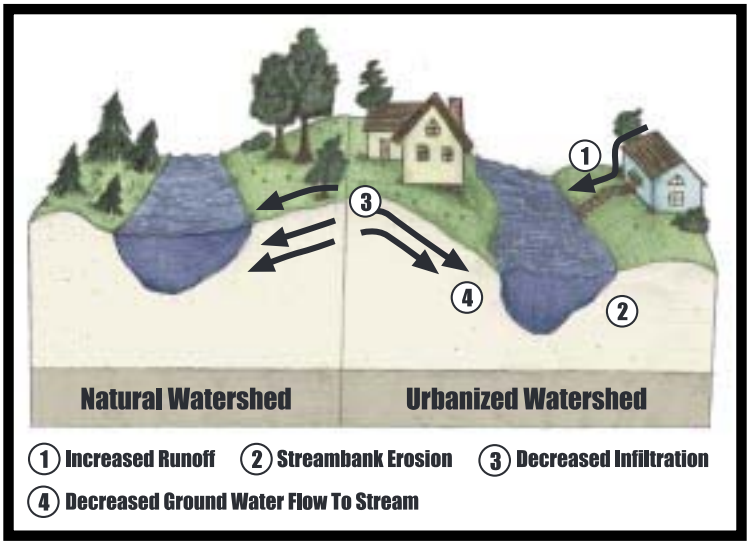
One of the first steps in watershed management is problem identification. Does the local lake choke with weeds in the summer? Are failing septic systems closing shellfish beds? Is increased runoff causing stream banks to erode?

Once the problems and their causes have been identified, practical solutions must be chosen. The watershed community must identify traditional or innovative solutions that will work in their area. These solutions can range from changes to municipal stormwater ordinances to homeowner education about lawn care to stream bank restoration projects.

Identifying which solutions are right for a particular watershed is a crucial component of the watershed management process. Different solutions work in different communities. Developed with the watershed community of industry, government, business and citizens, watershed management planning reflects the concerns and priorities of that community.

Once solutions have been identified, they must be implemented to be successful. This can be the most difficult part of the process. How can implementation be ensured? Who will carry out the plan? Is the community committed to implementing the plan? Are there resources available to do it?

The advantage of watershed management planning is that it addresses all sources of pollution within the watershed and is developed by the community most affected by it. Nonpoint source pollution is particularly suited to this approach because it is frequently beyond the scope of traditional regulatory programs. The plan can incorporate solutions ranging from change in local land use to integrated pest management. Each plan will uniquely fit the problems and solutions of its watershed.



New Jersey's five watershed bureaus and 20 watershed management areas

Northwest Bureau
(609) 633-3812

1. Upper Delaware River
2. Walkill, Pochuck, Papakating
11. Central Delaware Tributaries

Northeast Bureau
(609) 633-1179

3. Pompton, Pequannock, Wanaque, Ramapo
4. Lower Passaic, Saddle
5. Hackensack, Pascack, Hudson
6. Upper and Mid-Passaic, Whippany, Rockaway

Raritan Bureau
(609) 633-7020

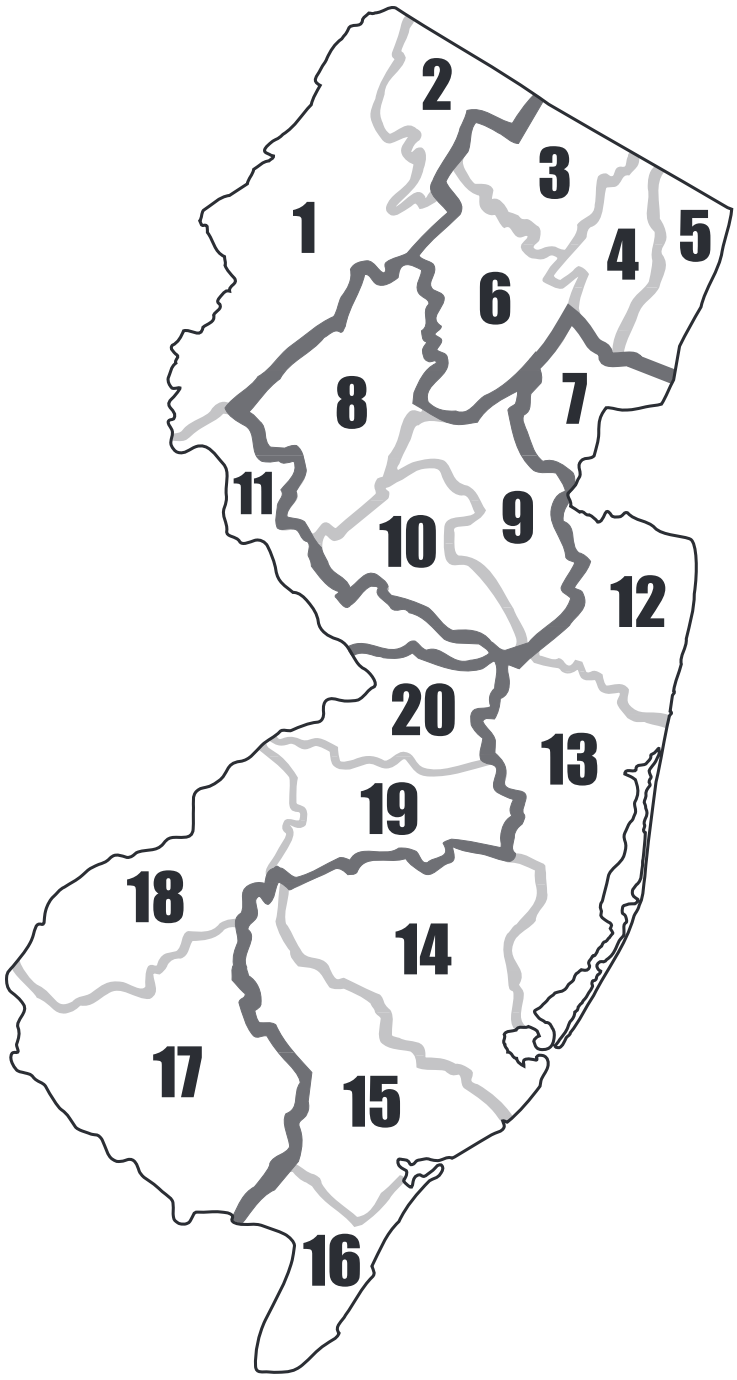
7. Elizabeth, Rahway, Woodbridge
8. North and South Branch Raritan
9. Lower Raritan, South River, Lawrence Brook
10. Millstone River

Atlantic Coastal Bureau
(609) 984-6888

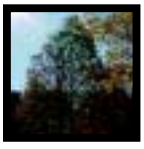
12. Monmouth Watersheds
13. Barnegat Bay Watersheds
14. Mullica, Wading River
15. Great Egg Harbor, Tuckahoe
16. Cape May Watersheds

Lower Delaware Bureau
(609) 633-1441

17. Maurice, Salem, Cohansey
18. Lower Delaware Tributaries
19. Rancocas Creek
20. Crosswicks Creek





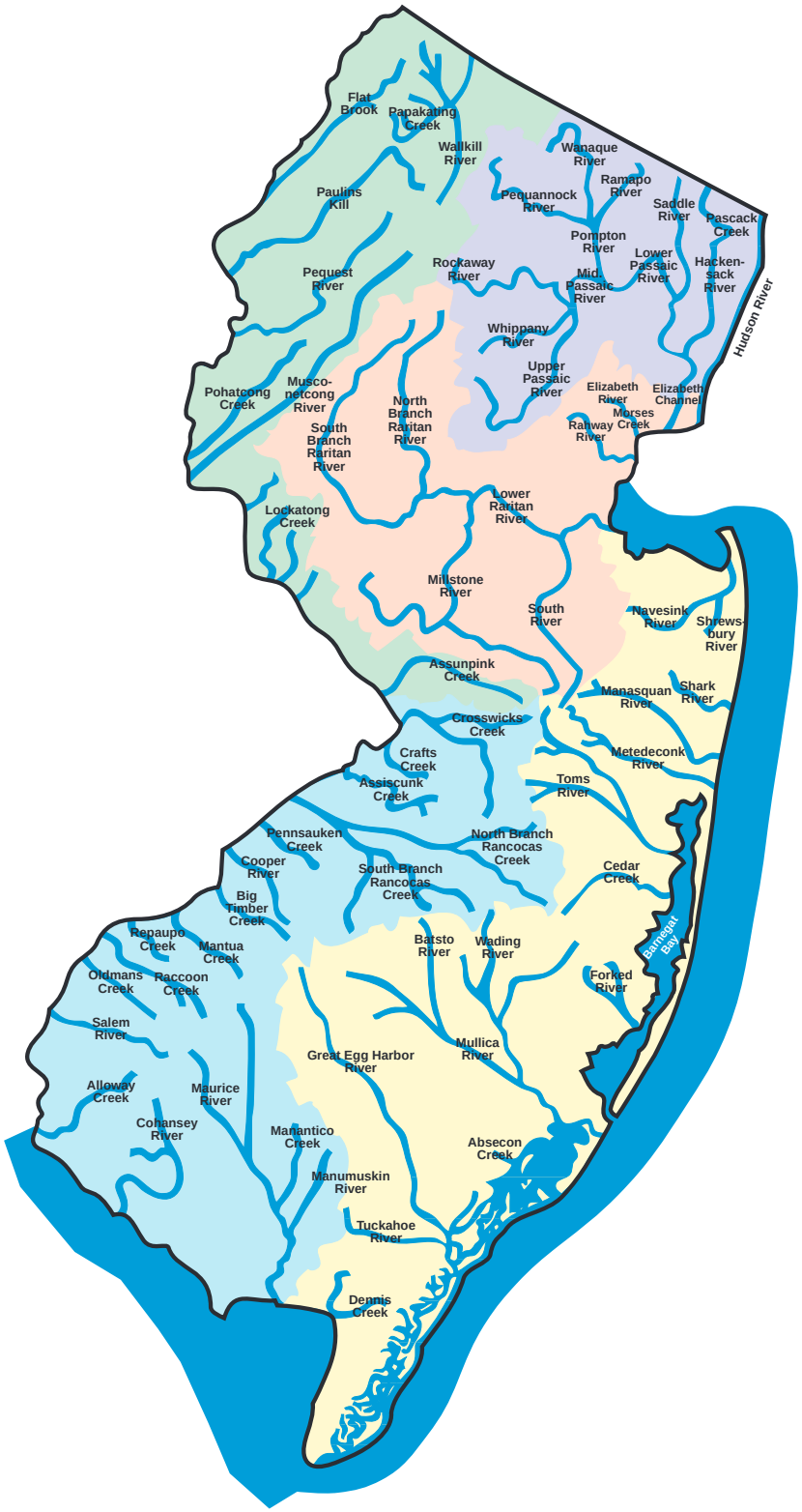





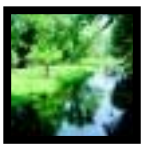
New Jersey's five watershed regions and major waterways

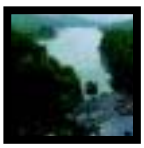
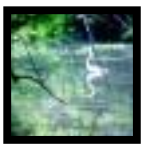
watershed regions

- Atlantic Coastal
- Lower Delaware
- Northeast
- Northwest
- Raritan





Watershed protection and nonpoint source pollution
what you can do today!

One way you can protect your watershed is to reduce nonpoint source pollution. Nonpoint source pollution or "people pollution" is contamination of our watersheds, ground water, waterways and ocean that results from everyday activities such as fertilizing the lawn, walking pets, changing motor oil and littering. With each rainfall, pollutants generated by these activities are washed from the entire watershed into local waterways. They can also soak into the ground contaminating the ground water below.

But there is good news - in our everyday activities we can stop nonpoint source pollution and keep our environment clean. Simple changes in your daily lifestyle can make a tremendous difference in the quality of New Jersey's water resources. Here are a few ways that you can reduce nonpoint source pollution:

Place litter in trash receptacles. Never throw litter, including cigarette butts and fast food containers, in streets or down storm drains. Recycle as much as possible.

Avoid the overuse of fertilizers. Do not apply them before a heavy rainfall. Do a soil test to see if fertilizers are necessary. Fertilizers contain nitrates and phosphates that, in abundance, cause blooms of algae that can lead to fish kills.

Use alternative to pesticides whenever possible. If you do use a pesticide, follow the label directions carefully. Many household products made to exterminate pests are also toxic to humans, animals, aquatic organisms and plants.

Pick up after your pet. Pet owners should use newspaper, bags or scoopers to pick up after their pets and dispose of wastes in the garbage or toilet, not the storm drain. Animal wastes contain bacteria and viruses that can contaminate shellfish and cause the closing of bathing beaches. Animal waste also contains nutrients that can cause algae blooms that are unsightly and can lead to fish kills.

Do not feed ducks and geese. Feeding ducks, geese and other waterfowl causes them to concentrate in small areas resulting in concentrated animal waste, causing the same problems as pet waste.

Dispose of household hazardous waste properly. Do not pour household hazardous products down any drain or toilet. Do not discard with the regular household trash. Use natural and less toxic alternatives whenever possible. Contact your County Solid Waste Management Office for information regarding household hazardous waste collection in your area. Many common household products (paint thinners, mothballs, drain and oven cleaners, to name a few) contain toxic ingredients. When improperly used or discarded, these products are a threat to public health and the environment.

Recycle all used motor oil. Do not dump used motor oil down storm drains or on the ground. Take it to a local public or private recycling center. Used motor oil contains toxic chemicals that are harmful to animals, humans and fish.

Wash your car only when necessary. Consider using a commercial car wash that recycles its wash water. Like fertilizers, many car detergents contain phosphate. If you wash your car at home, use a non-phosphate detergent.

Treat your septic system with respect. Avoid adding unnecessary grease, household hazardous products and solids to your septic system. Conserve water. Inspect your tank annually and pump it out every three to five years depending on its use. An improperly working septic system can contaminate ground water and create public health problems.

Use marine sanitation devices and pump-out facilities at marinas when boating. Observe the state's no discharge zones. Dumping boat sewage overboard introduces bacteria and viruses into the water.

For additional information please contact:
New Jersey Department of Environmental Protection Watershed Management
P.O. Box 418 401 East State Street Trenton New Jersey 08625-0418
609-292-2113 www.state.nj.us/ dep/ watershedmgt

COLORING BOOK

HEY KIDS,

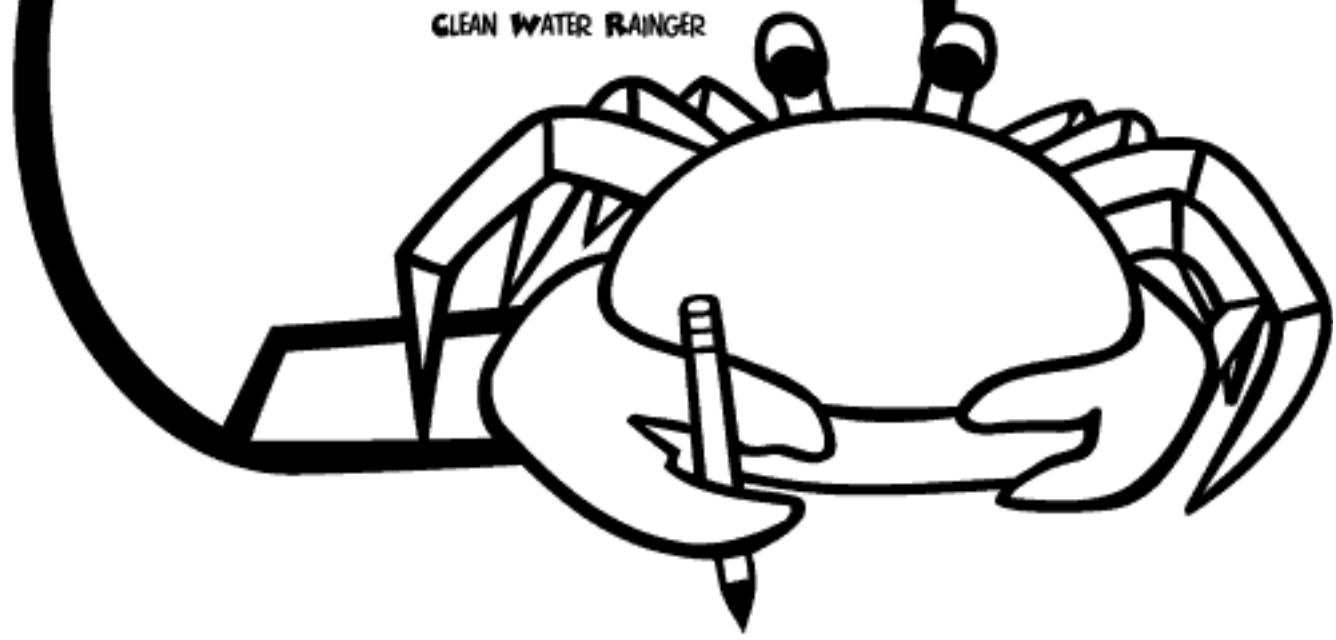
ARE YOU INTERESTED IN KEEPING NEW JERSEY'S WATER CLEAN? WELL, WE NEED YOUR HELP! NOT LONG AGO, MY FRIENDS AND I FOUND THAT ONE OF NEW JERSEY'S BIGGEST WATER POLLUTION PROBLEMS COMES FROM PEOPLE -- FROM HOW WE LIVE OUR DAILY LIVES. THAT MEANS THINGS LIKE LITTERING, NOT CLEANING UP AFTER PETS, USING TOO MANY PESTICIDES, AND DUMPING MOTOR OIL DOWN STORM DRAINS. WITH CLOSE TO EIGHT MILLION PEOPLE LIVING IN THE STATE, WHAT EVERYBODY DOES CAN REALLY ADD UP.

THIS COLORING BOOK TELLS THE STORY OF HOW WE FOUND THE SOURCE OF THE PROBLEM, AND IT TELLS WHY WE STARTED THE CLEAN WATER RANGER TEAM.

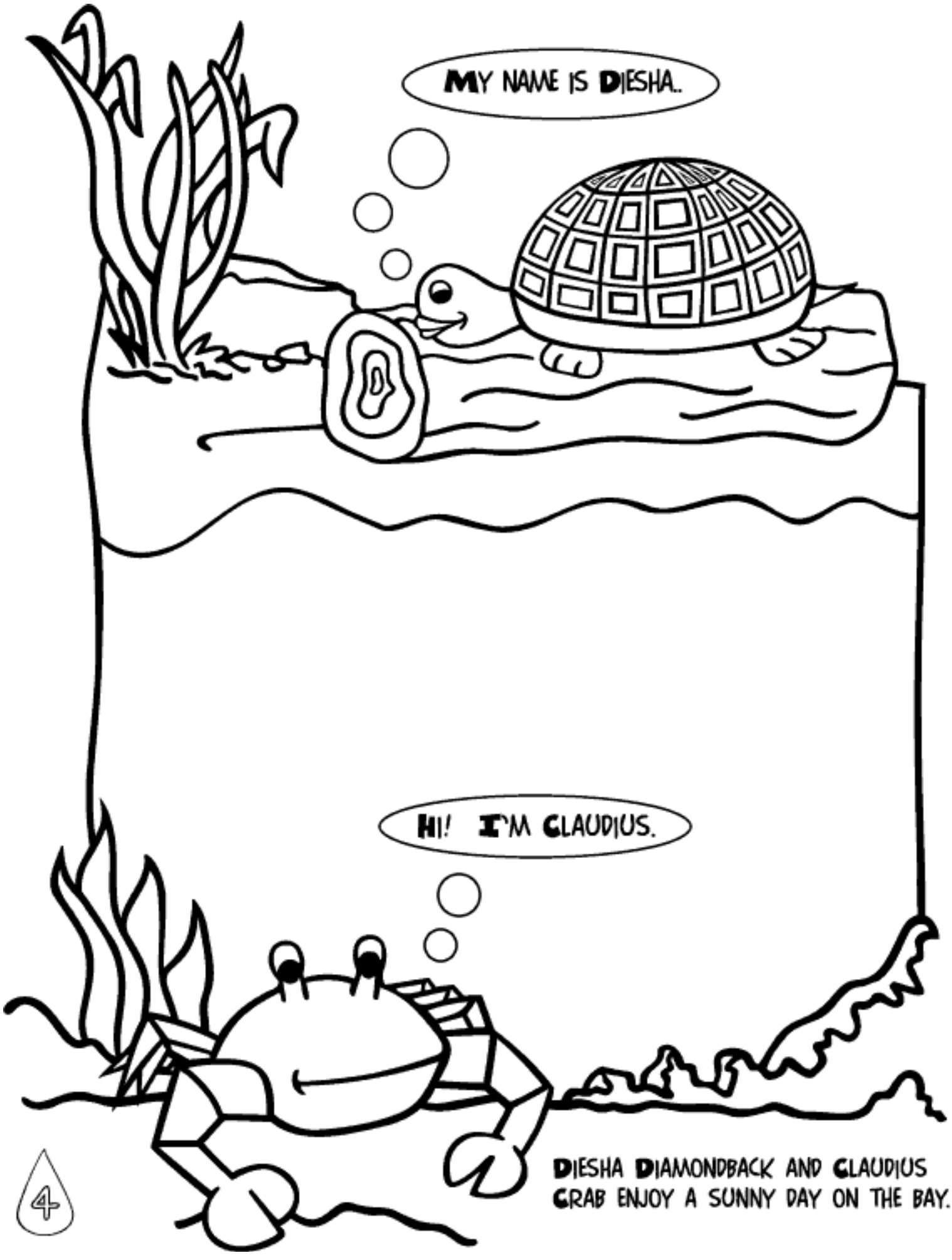
YOUR FRIEND,

Claudius Crab

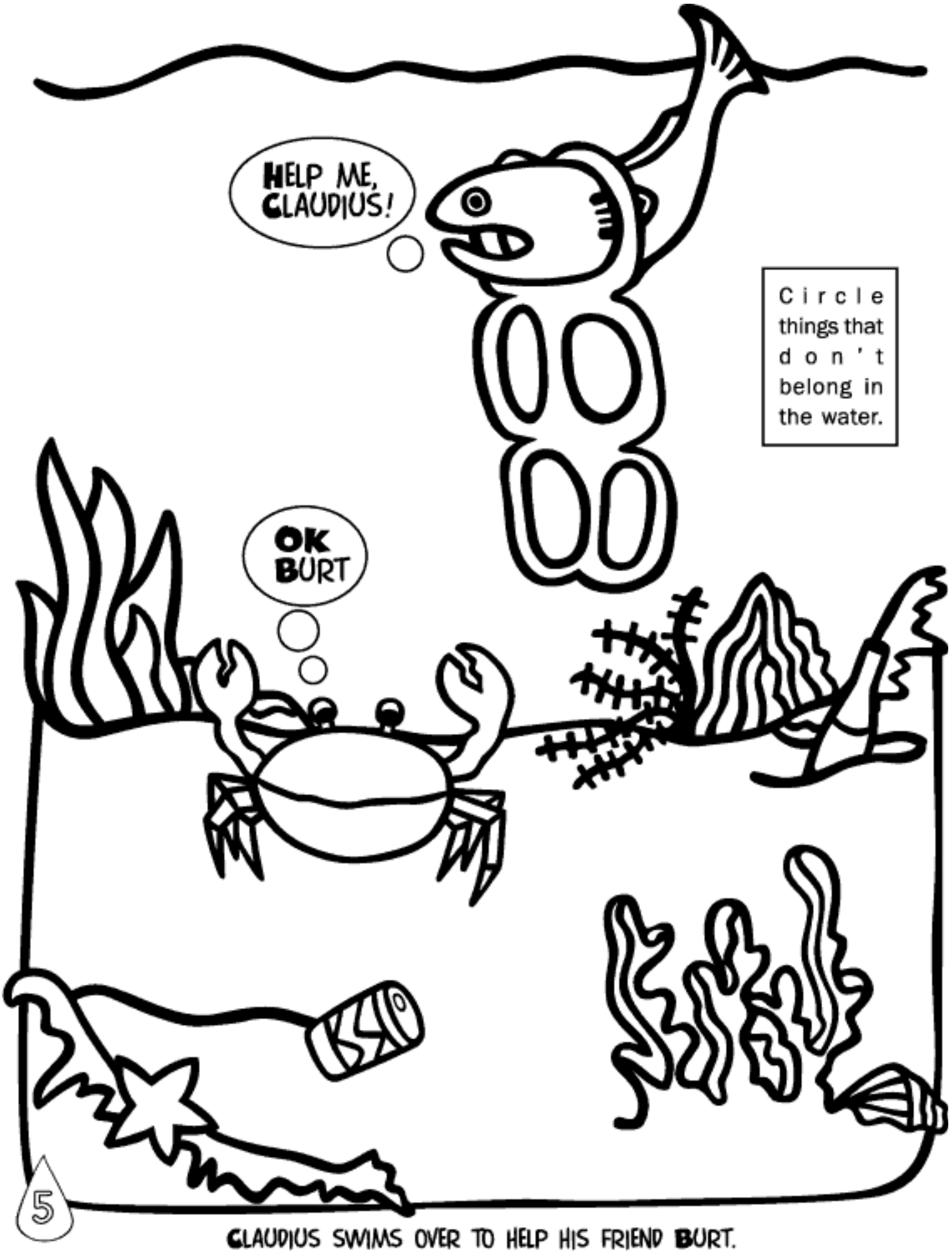
CLEAN WATER RANGER



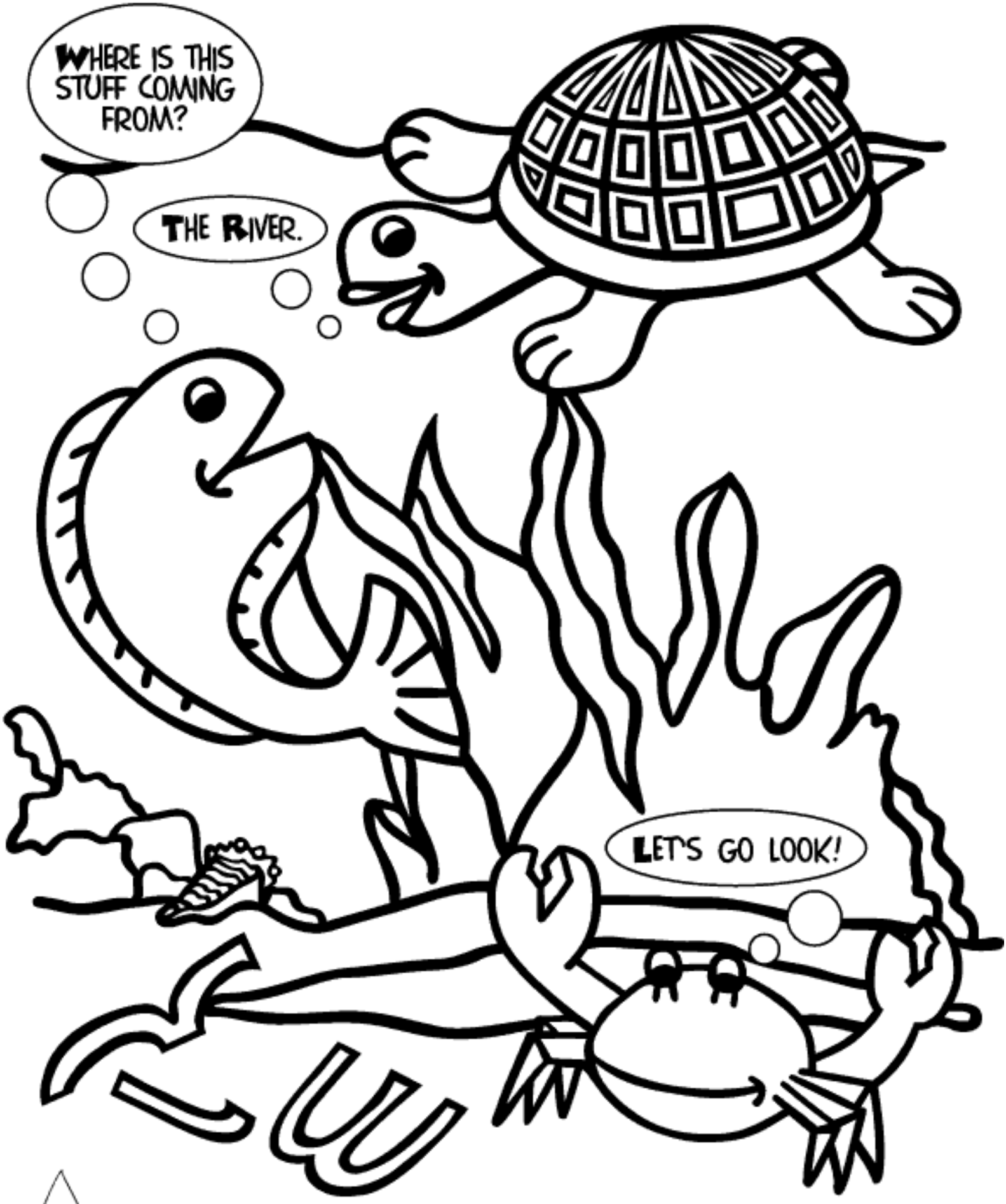
HOWIE THE GREAT BLUE HERON LIVES NEAR NEW JERSEY'S RIVERS, STREAMS, LAKES AND BAYS. HIS FRIENDS MARSHALL MUSKRAT, BURT BASS AND FRANCINE FROG, LIVE THERE TOO.



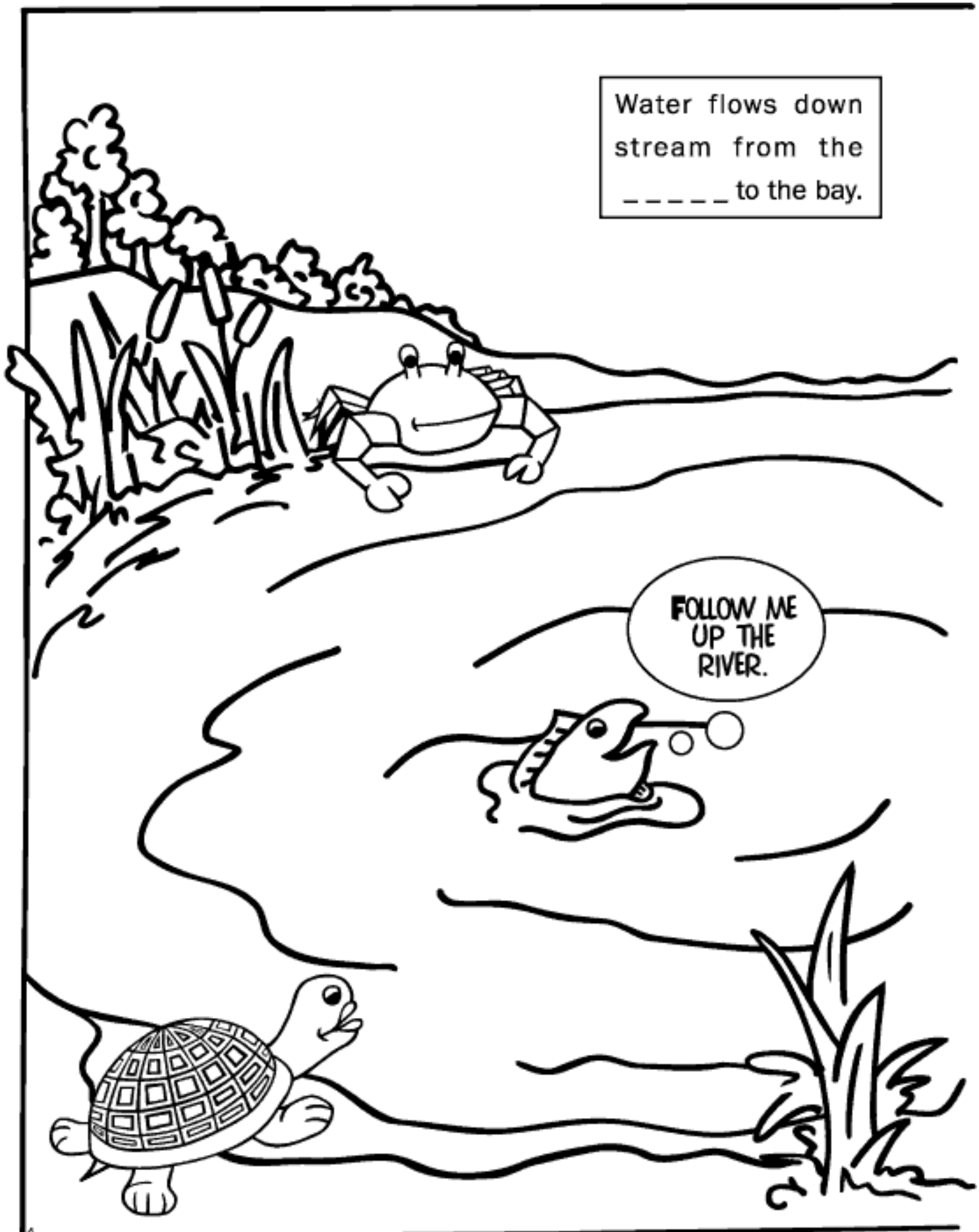
DIESHA DIAMONDBACK AND CLAUDIUS CRAB ENJOY A SUNNY DAY ON THE BAY.



CLAUDIUS SWIMS OVER TO HELP HIS FRIEND BURT.

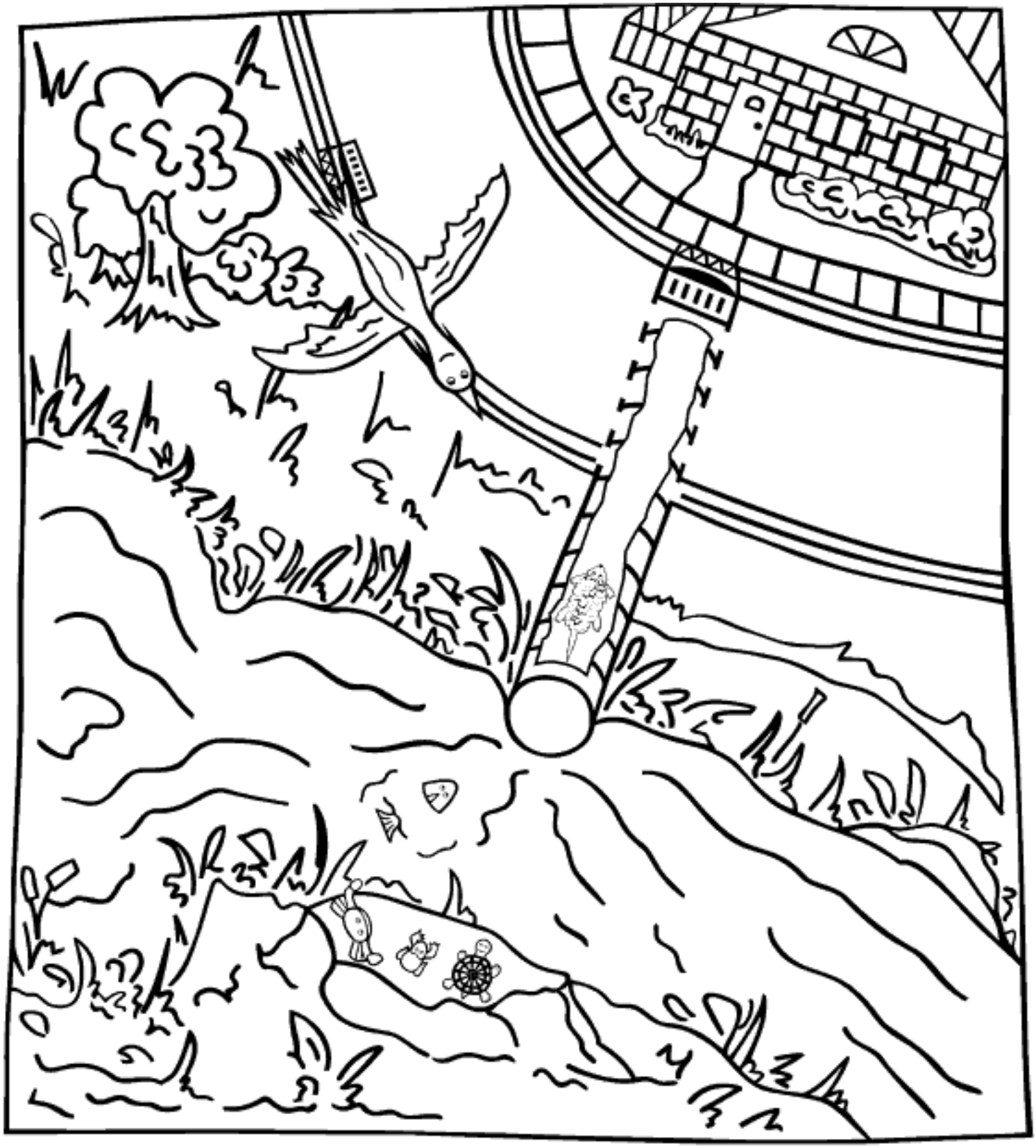


DIESHA AND HER FRIENDS WANT TO FIND WHERE THE LITTER IS COMING FROM.



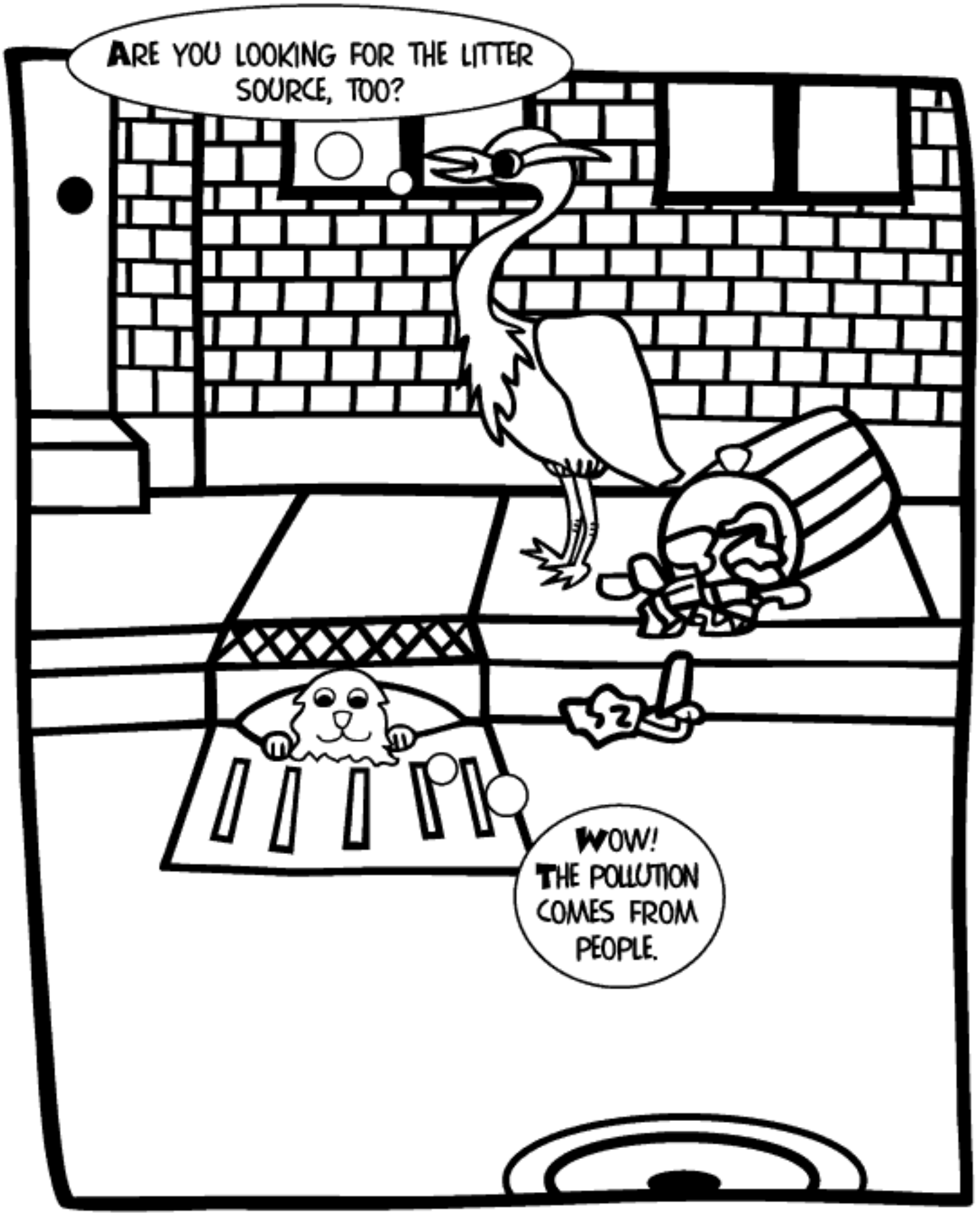
CLAUDIUS, BURT AND DIESHA GO UP STREAM IN SEARCH OF THE POLLUTION SOURCE.

AS DIESHA, BURT AND CLAUDIUS SWIM UP STREAM, THEY MEET UP WITH THEIR FRIENDS, FRANCINE AND MARSHALL. THEY ALSO FIND A STORMPIPE. MARSHALL VOLUNTEERS TO GO UP THE PIPE.

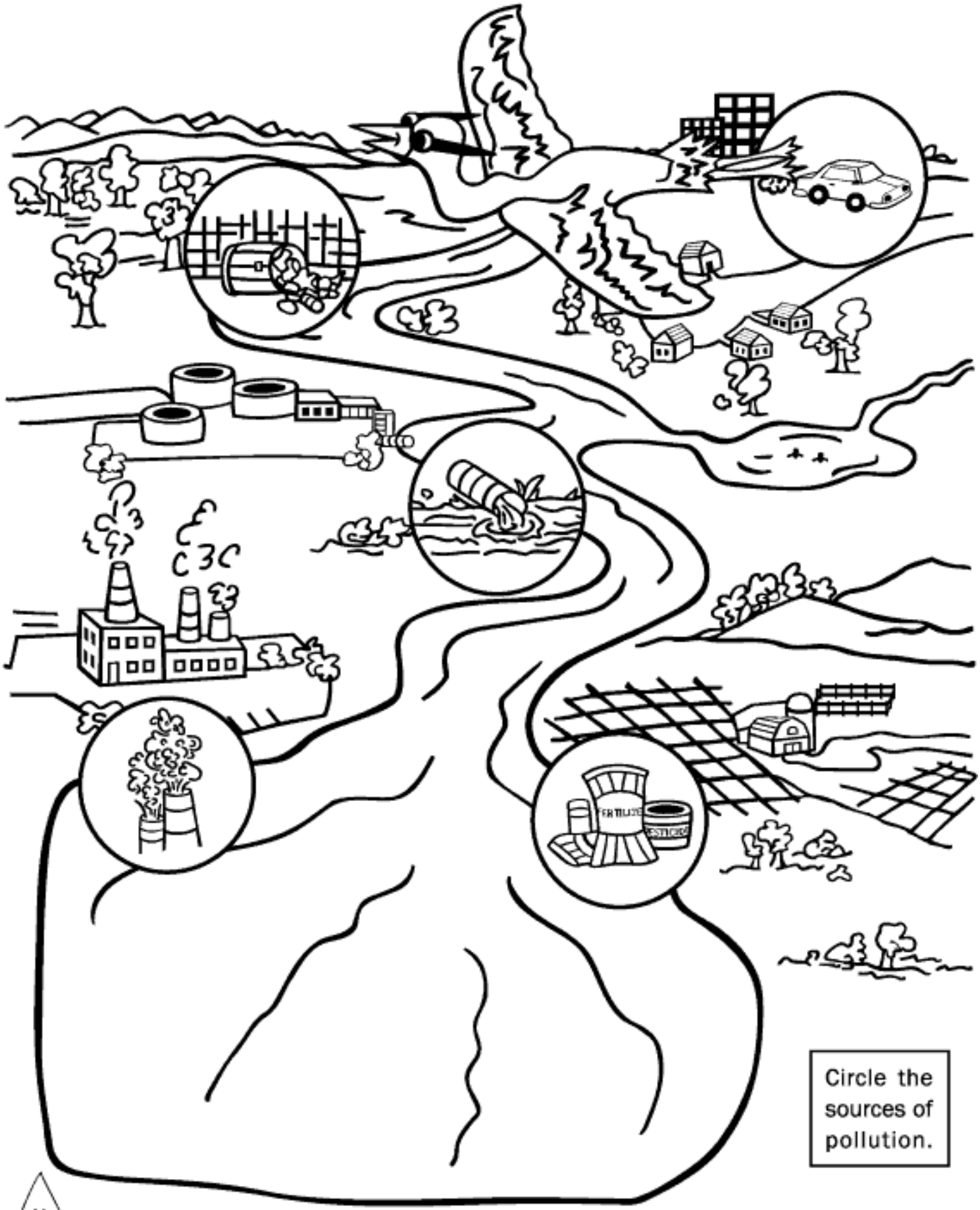


9

AS **H**OWIE FLIES ABOVE, **M**ARSHALL GOES THROUGH THE STORMPIPE IN SEARCH OF THE POLLUTION SOURCE.



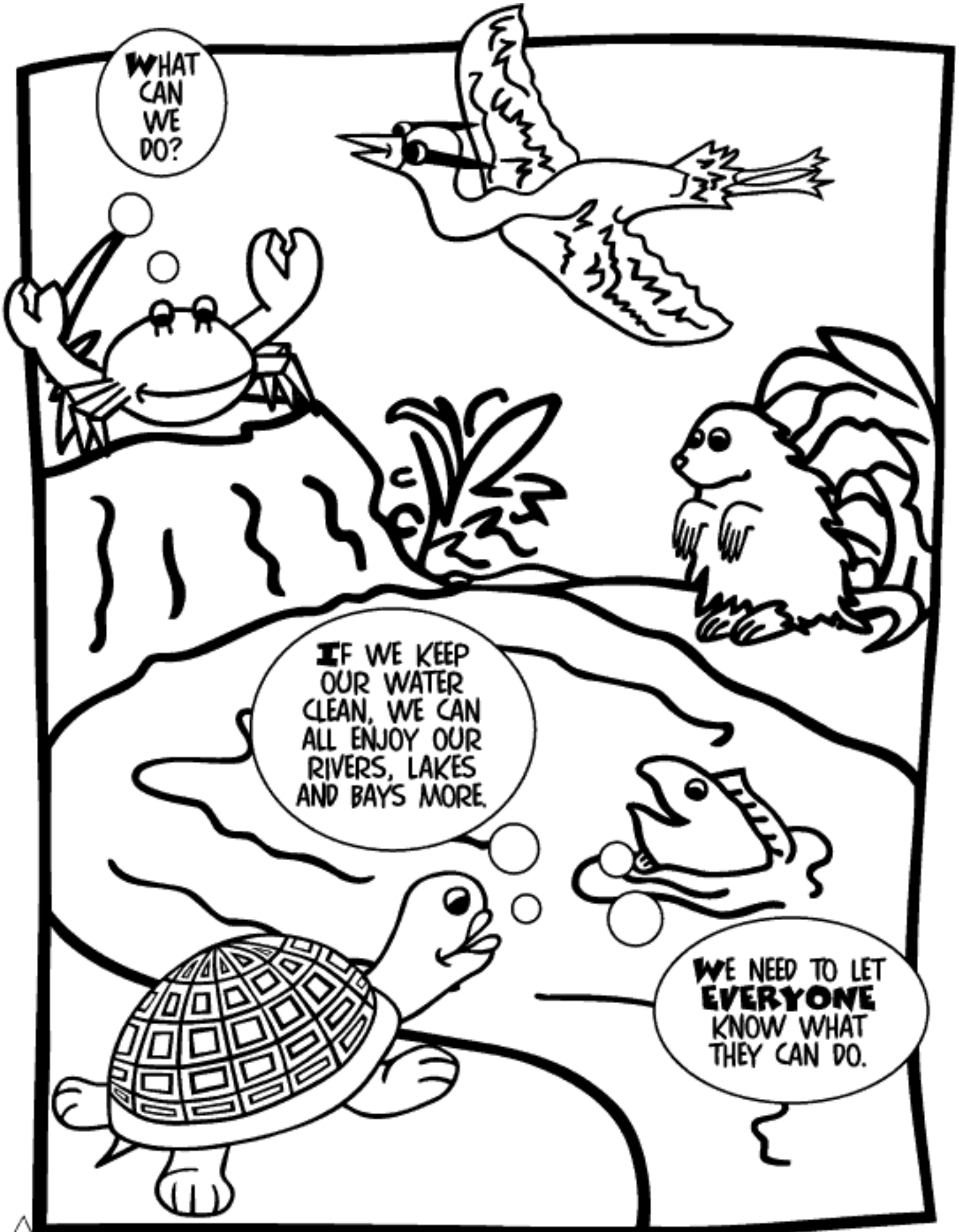
AS MARSHALL PEEKS OUT THE STORM DRAIN, HE SEES HIS FRIEND HOWIE. HE ALSO SEES WHERE THE LITTER IS COMING FROM.



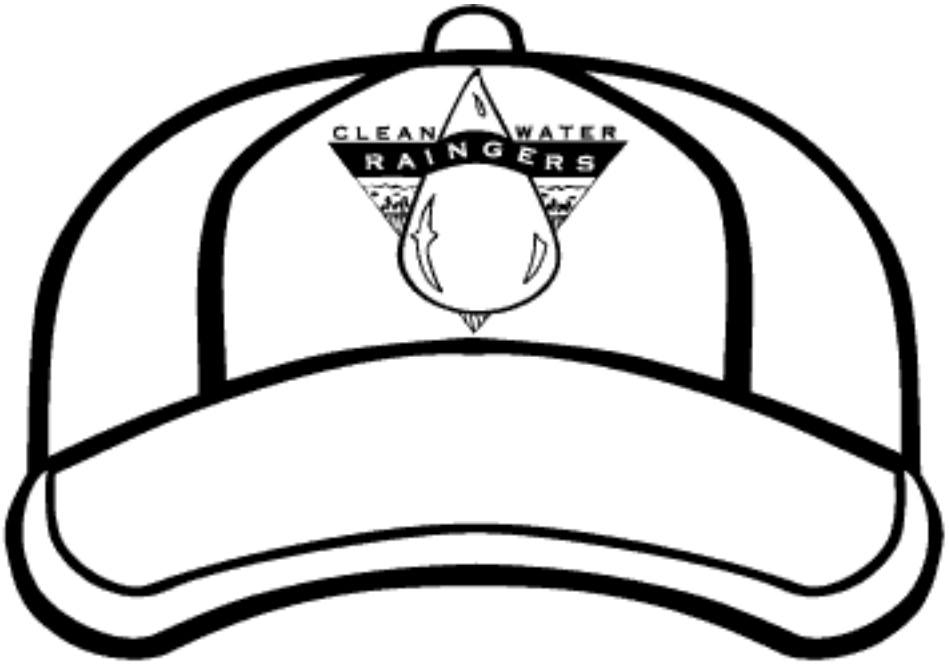
Circle the sources of pollution.

AS HOWIE FLYS BACK TO HIS FRIENDS, HE SEES OTHERS SOURCES OF POLLUTION.

HOWIE AND MARSHALL TELL THEIR FRIENDS WHAT THEY'VE FOUND.



THE FRIENDS FORM THE CLEAN WATER RAINGERS TEAM TO HELP KEEP THEIR WATER CLEAN. THAT'S RAINGERS AS IN RAIN!



Draw yourself here, so you can be a part of the Clean Water Raingers Team.

TOP TEN THINGS YOU CAN DO TO HELP KEEP WATER CLEAN AS PART OF THE CWR TEAM

1. NEVER THROW ANYTHING DOWN STORM DRAINS. THEY ARE FOR RAINWATER ONLY.

2. DON'T LITTER. ALWAYS PUT TRASH WHERE IT BELONGS.

3. ALWAYS CLEAN UP AFTER YOUR PETS. OBEY YOUR TOWN'S "POOPER SCOOPER" LAWS.

4. TELL OTHERS HOW IMPORTANT IT IS TO KEEP OUR LAND AND WATER CLEAN.

5. PLANT A TREE. THEY TAKE POLLUTANTS OUT OF GROUND WATER, PROVIDE SHADE, AND CLEAN THE AIR.

6. FIND OUT WHAT WATERWAY YOU LIVE NEAR. WHERE DOES YOUR WATER COME FROM?

7. PRECYCLE! BUY PRODUCTS THAT USE THE LEAST AMOUNT OF PACKAGING.

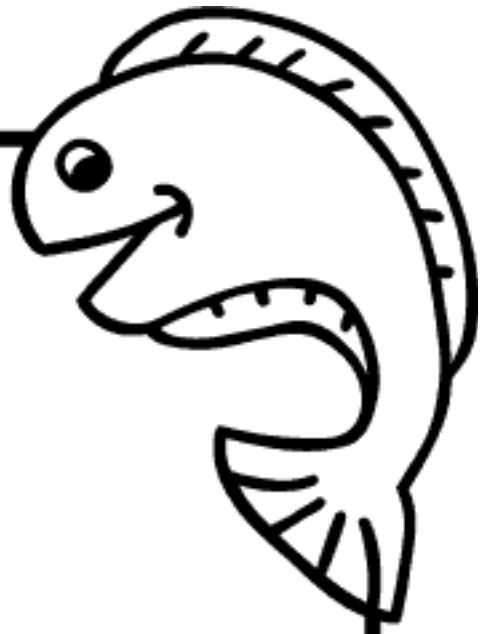
8. RECYCLE. FIND OUT WHAT IS RECYCLABLE IN YOUR COMMUNITY. BUY PRODUCTS IN RECYCLED OR RECYCLABLE CONTAINERS.

9. CONSERVE WATER WHENEVER POSSIBLE. FOR EXAMPLE, TURN OFF THE WATER WHILE BRUSHING YOUR TEETH AND DON'T LINGER IN THE SHOWER.

10. LEARN ABOUT ENVIRONMENTAL ISSUES. GET INVOLVED IN LOCAL ORGANIZATIONS.

JOIN THE TEAM!

THIS BOOK BELONGS TO...



CREDITS

THE CLEAN WATER RANGERS CONCEPT WAS DEVELOPED BY THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

CLEAN WATER RANGERS
NJDEP
DIVISION OF WATERSHED MANAGEMENT
PO BOX 418
TRENTON, NJ 08625-0418

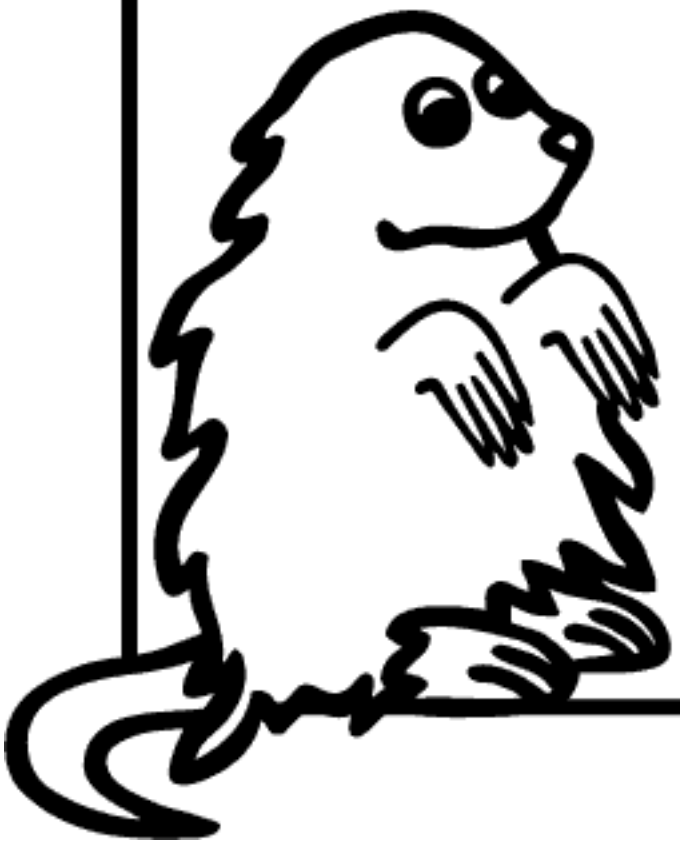
609-292-2113

DONALD T. DIFRANCESCO, ACTING GOVERNOR
STATE OF NEW JERSEY
ROBERT C. SHINN, JR., COMMISSIONER
DEPARTMENT OF ENVIRONMENTAL PROTECTION

KYRA HOFFMANN,
COORDINATOR

ERIN BRODEL,
GRAPHIC DESIGN & ILLUSTRATION

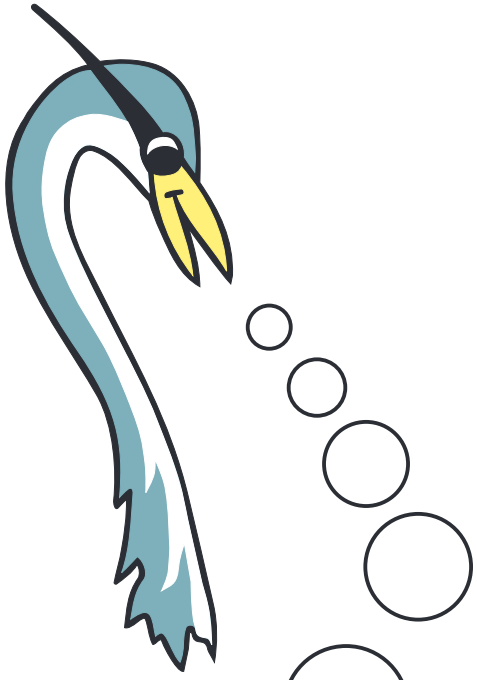
WATERSHEDS...
WHERE YOUR QUALITY OF LIFE BEGINS.
THE LINK BETWEEN OUR LAND, OUR WATER AND OUR COMMUNITY.



How To Be A Clean Water Rainger

Save this booklet! It contains valuable information you can use!

Who Are the Clean Water Raingers?



Hi! I'm Howie Heron. My friends and I have joined the Clean Water Raingers team and we're here to share what we've learned about the water quality of the great state of New Jersey. The Clean Water Raingers team is dedicated to protecting New Jersey's water. In this booklet, you'll learn how your everyday activities affect water.

CLEAN WATER RAINGERS

Dear Clean Water Rainger Candidate,

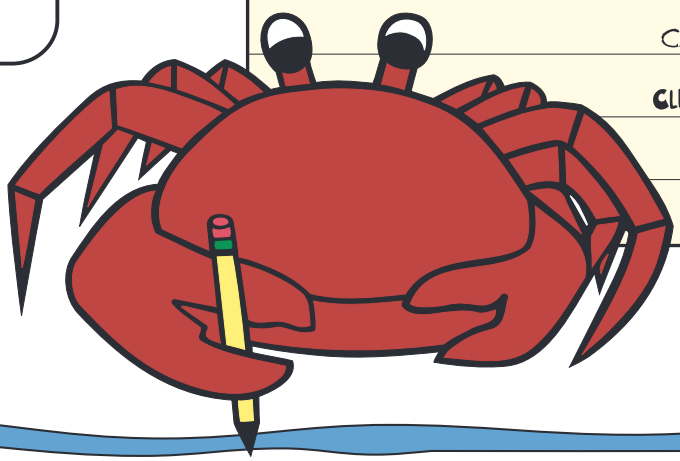
Are you interested in keeping New Jersey's water clean? Well, we need your help! Not long ago, my friends and I discovered that one of New Jersey's biggest water pollution problems comes from people -- from how we live our daily lives. That means things like littering, not cleaning up after pets, using too many pesticides, and dumping motor oil down storm drains. With eight million people living in the state, what everybody does can really add up.

We hope you will use the information in this booklet to improve water quality in your neighborhood. Join the Clean Water Rainger team and make New Jersey a better place to live, work, and play!

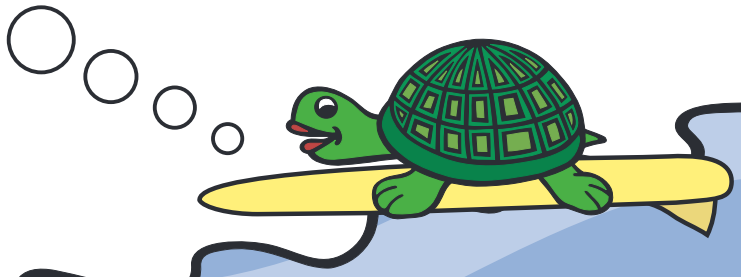
Your friend,

Claudius Crab

Clean Water Rainger



HI! I'M DIESHA DIAMONDBACK. DID YOU KNOW THAT ALL OF THE STREAMS, CREEKS, RIVERS, LAKES, AND BAYS IN NEW JERSEY EVENTUALLY FLOW TO THE ATLANTIC OCEAN? WHAT YOU DO IN YOUR HOME TOWN CAN AFFECT THE JERSEY SHORE, EVEN IF YOU LIVE FAR AWAY!



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Acknowledgments

The Clean Water Raingers concept was developed by the New Jersey Department of Environmental Protection.

Kyra Hoffmann, Coordinator
Erin Brodel, Graphic Design & Illustration

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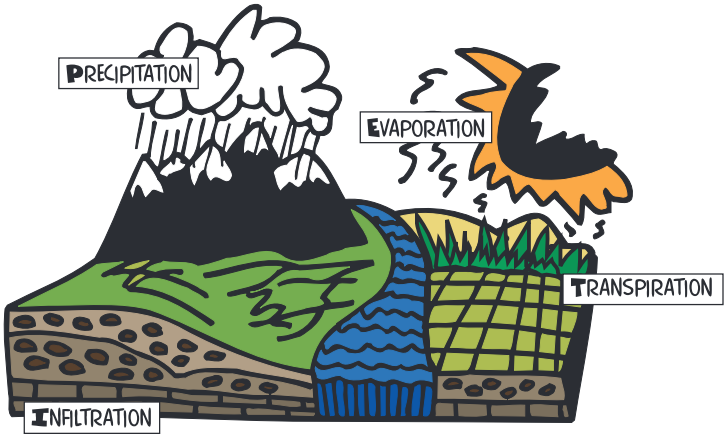
www.state.nj.us/dep/watershedmgt

MARCH 2001

The Water Cycle

For millions of years, water has been recycled and reused. It is important to understand how water moves through the Earth's water cycle. When it rains, the rainwater flows on top of the land surface into waterways or is absorbed by the ground or plants. Water evaporates from land and water, becoming water vapor in the atmosphere. Water is also released from trees and other plants through "transpiration." The water vapor from evaporation and transpiration forms clouds in the atmosphere which in turn provide precipitation (rain, hail, snow, sleet) to start the cycle over again. This process of water recycling, known as the water cycle, repeats itself over and over.



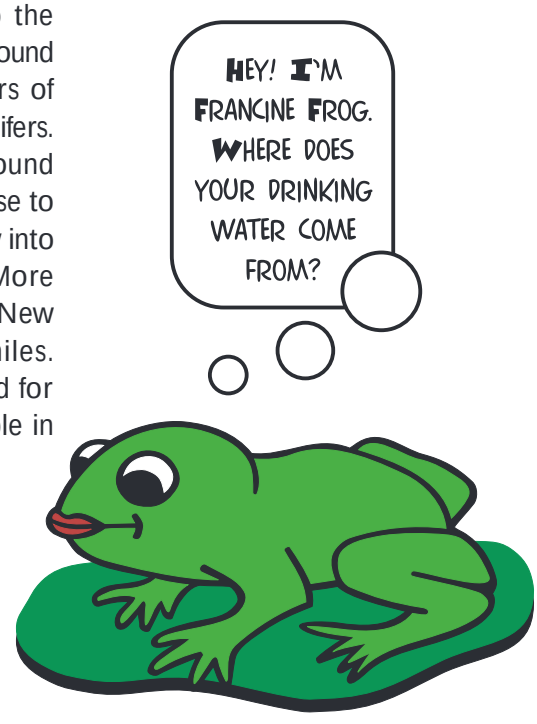
Water. It's an essential part of our lives. We use it to drink, to cook, to bathe, and to clean. It's used by industry and businesses to make their products. Farmers and gardeners use it to water their crops. Fish live in it and other animals need it to survive.

The earth has a lot of water - approximately 1.4 quintillion cubic meters of it. Yet, less than 1% of that is fresh, usable water. The oceans, glaciers, and ice caps account for greater than 99% of all water on Earth. That remaining small fraction accounts for every cloud, river, lake, pond, swamp, and aquifer. Of that, more than two thirds is below the Earth's surface.

In New Jersey, an average of 44 inches of precipitation per year replenishes the state's 6,500 miles of streams and rivers, 61,000 acres of lakes and an extensive network of underground aquifers.

What is Ground Water?

Some rainwater runoff seeps into the ground to become ground water. Ground water moves into water-filled layers of porous rock or soil that are called aquifers. Aquifers are not flowing underground streams or lakes. If the aquifer is close to the surface, its ground water can flow into nearby waterways and wetlands. More than 100 aquifers are below us in New Jersey, covering 7,500 square miles. Through wells, ground water is used for drinking water for half of the people in New Jersey.



What is a Watershed?

HOWIE HERON HERE. AS I FLY OVER NEW JERSEY, I CAN SEE THAT NEW JERSEY IS MADE OF MANY DIFFERENT WATERSHEDS. WE ALL LIVE IN A WATERSHED. WHICH ONE DO YOU LIVE IN?

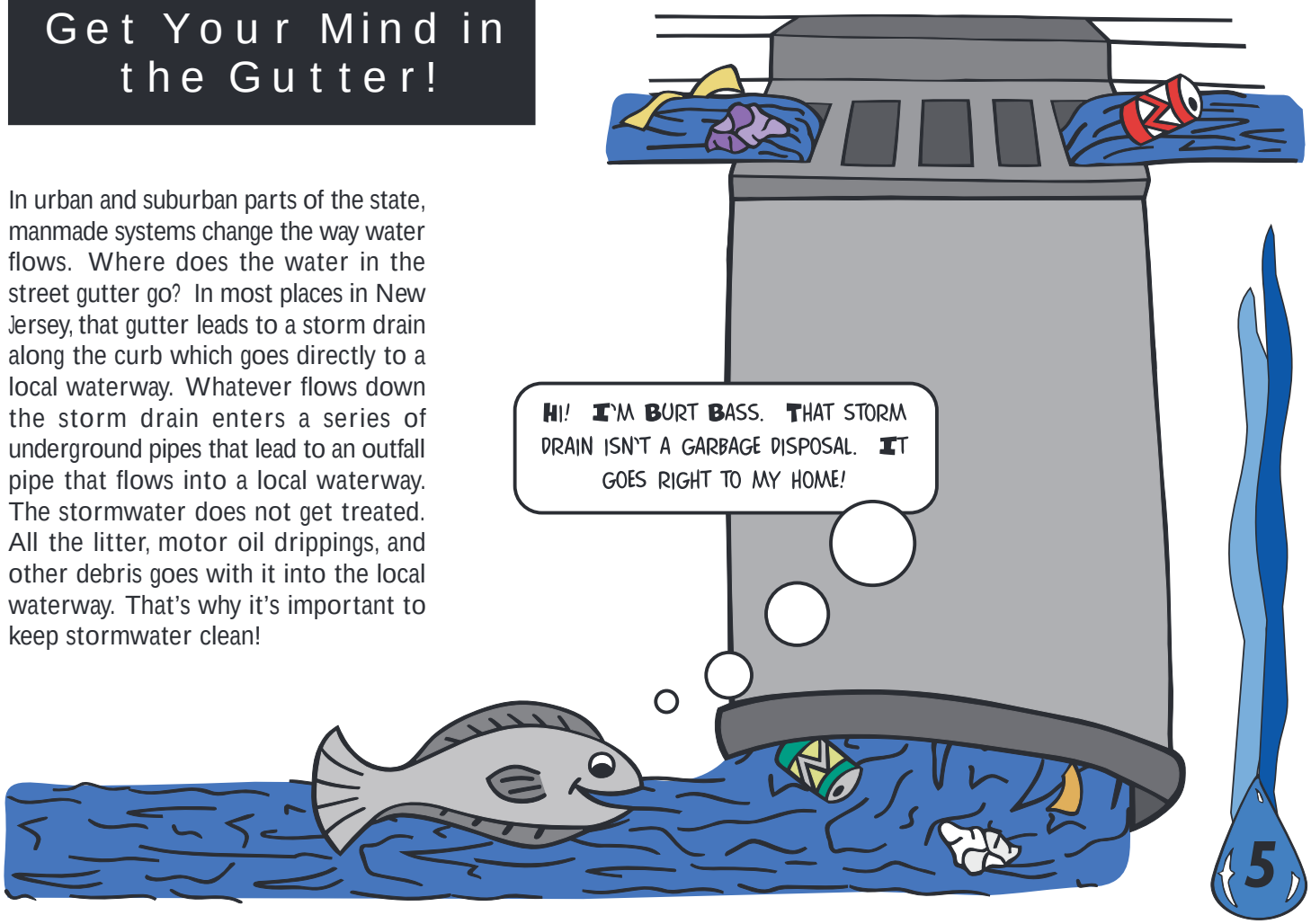
A watershed is the area of land surrounding a waterway that drains into it. A watershed includes not only the waterway itself but also the entire land area that drains to it. For example, the watershed of a lake would include not only the streams entering into that lake but also the land area that drains into those streams and eventually the lake.

A watershed can be as small as a backyard that drains to a puddle or as large as the sections of New York, Pennsylvania, New Jersey and Delaware that drain into the Delaware River.

So what happens on the land in a watershed affects the waterway. For example if too many fertilizers are used on lawns, the extra fertilizer can end up in the local waterway. The same thing goes for ground water. The extra fertilizer could end up in ground water and maybe someone's well.

Get Your Mind in the Gutter!

In urban and suburban parts of the state, manmade systems change the way water flows. Where does the water in the street gutter go? In most places in New Jersey, that gutter leads to a storm drain along the curb which goes directly to a local waterway. Whatever flows down the storm drain enters a series of underground pipes that lead to an outfall pipe that flows into a local waterway. The stormwater does not get treated. All the litter, motor oil drippings, and other debris goes with it into the local waterway. That's why it's important to keep stormwater clean!



What's Wrong With Our Water?

On his flights over New Jersey, Howie Heron sees that many water pollution problems begin upstream and concentrate as water flows toward the bays and the ocean. He has seen improvement as regulation of industries and improved sewage treatment have helped clean up the water. Now the number one problem in many areas is "polluted runoff."

Polluted runoff is stormwater runoff that picks up pollution as it washes over lawns, parking lots, roadways, farmland and other surfaces. There are four basic types of pollution in runoff: soil particles, nutrients, bacteria and toxic substances.

Soil Particles

Construction sites, farms, and eroded stream banks can be large sources of pollution. Because bare ground lacks plants to hold soil in place, rain and waves can easily lead to soil erosion.

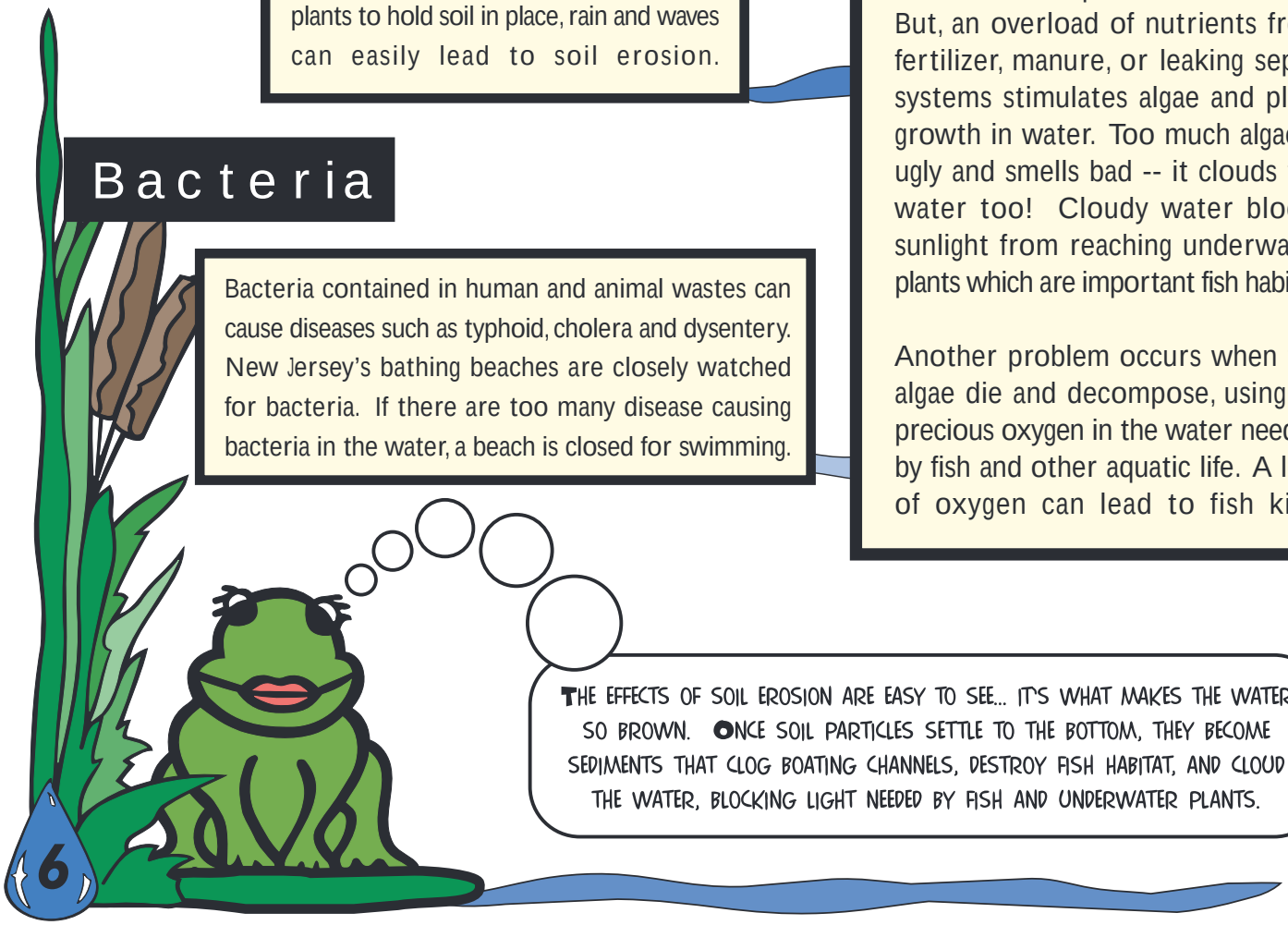
Nutrients

Nutrients, like potassium, phosphorous, and nitrogen, help plants grow. Just like we need food to survive, so do plants in the water. But, an overload of nutrients from fertilizer, manure, or leaking septic systems stimulates algae and plant growth in water. Too much algae is ugly and smells bad -- it clouds the water too! Cloudy water blocks sunlight from reaching underwater plants which are important fish habitat.

Another problem occurs when the algae die and decompose, using up precious oxygen in the water needed by fish and other aquatic life. A loss of oxygen can lead to fish kills.

Bacteria

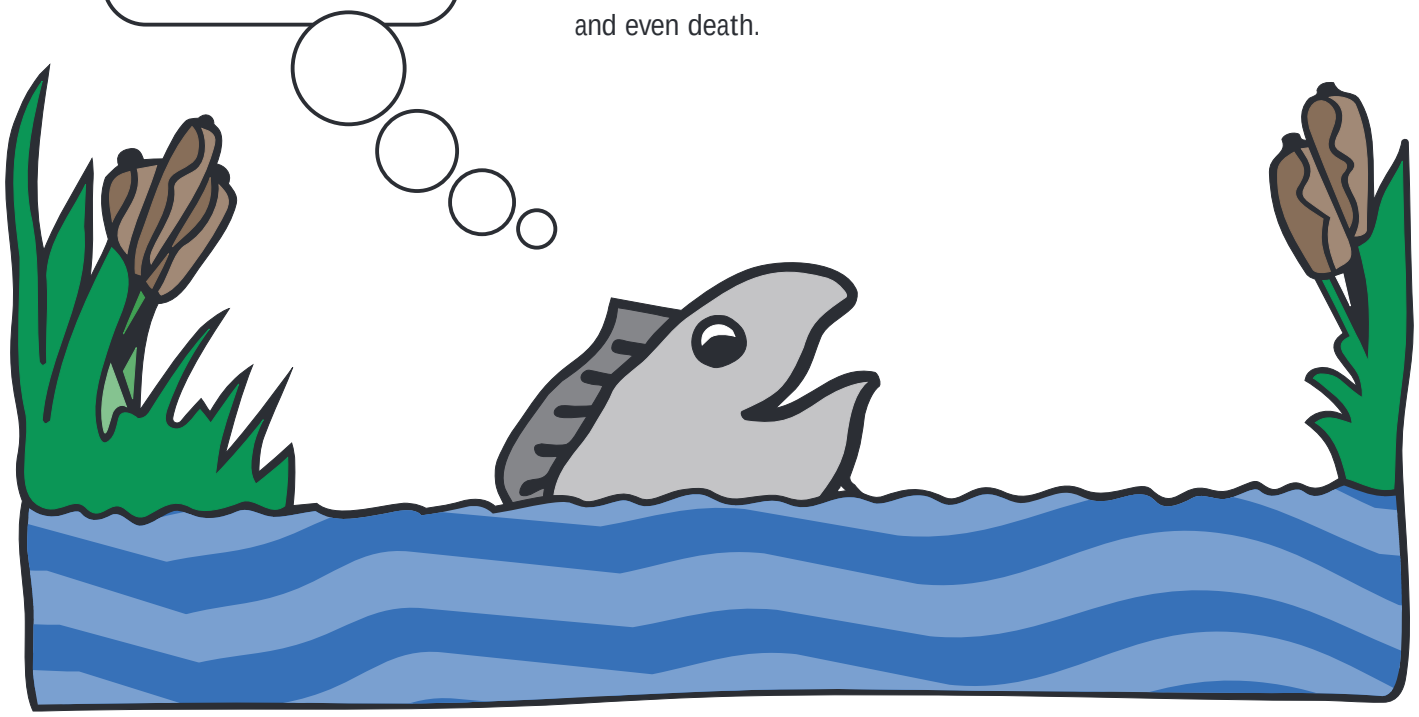
Bacteria contained in human and animal wastes can cause diseases such as typhoid, cholera and dysentery. New Jersey's bathing beaches are closely watched for bacteria. If there are too many disease causing bacteria in the water, a beach is closed for swimming.



THE EFFECTS OF SOIL EROSION ARE EASY TO SEE... IT'S WHAT MAKES THE WATER SO BROWN. ONCE SOIL PARTICLES SETTLE TO THE BOTTOM, THEY BECOME SEDIMENTS THAT CLOG BOATING CHANNELS, DESTROY FISH HABITAT, AND CLOUD THE WATER, BLOCKING LIGHT NEEDED BY FISH AND UNDERWATER PLANTS.

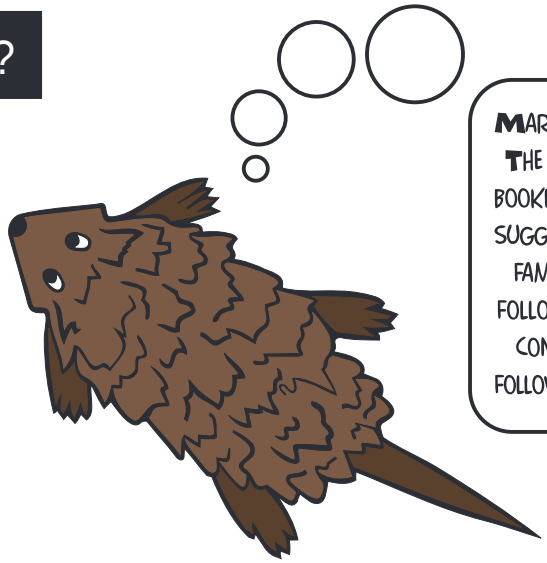
Toxic Substances

Toxic substances include oil and gas, heavy metals (zinc, mercury, cadmium, lead, etc.) and pesticides. When these substances are washed off sidewalks, parking lots, lawns, gardens, and cropland, they can end up in nearby streams and lakes and can even soak into the ground. Once in the water system, these pollutants can be carried downstream to settle into lakes, bays, and aquifers. Toxic substances can contaminate small organisms, which are eaten by fish and birds. The toxins build up in the fat of the larger animals, possibly leading to illness, birth defects, and even death.

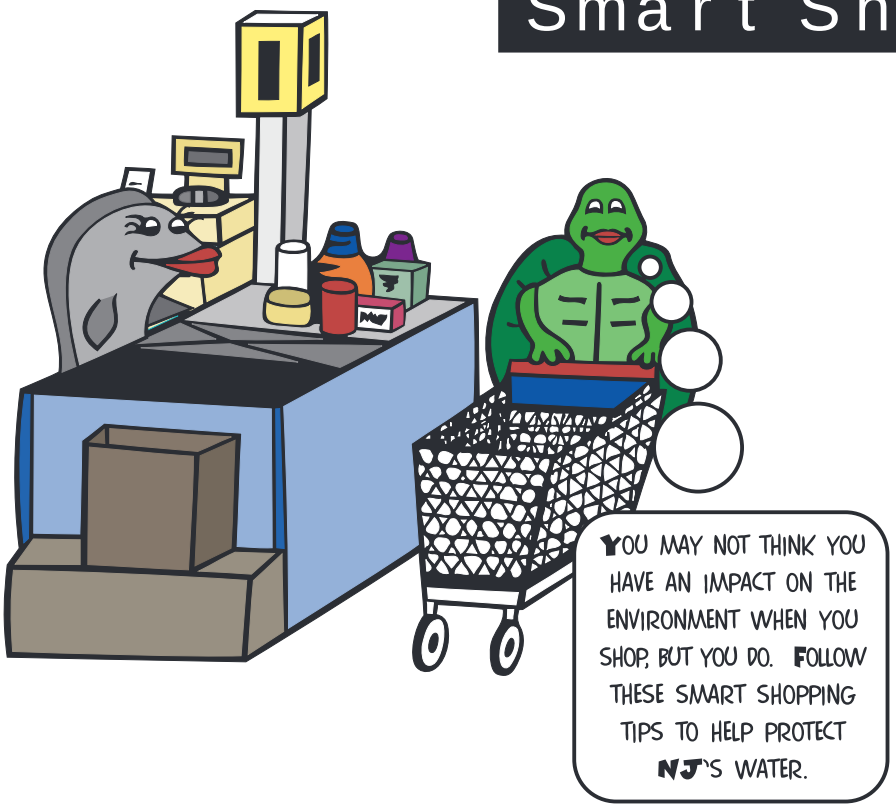


What Can You Do?

The most important thing you can do to improve New Jersey's water is to learn about the ways in which you and others affect the environment. Lots of little changes will make the biggest difference!



Smart Shopping Tips



Precycle! That means buying products that use the least amount of packaging. This helps by reducing water pollution from manufacturing and trash disposal problems.

Recycle! Find out what is recyclable in your community. Buy products in recyclable containers. Buy containers or products made from recycled materials.

Read labels and be aware of what they mean before you buy. Watch for signal words such as "caution," "warning," and "danger." These indicate that an item is a potentially hazardous product that consumers need to be concerned about.

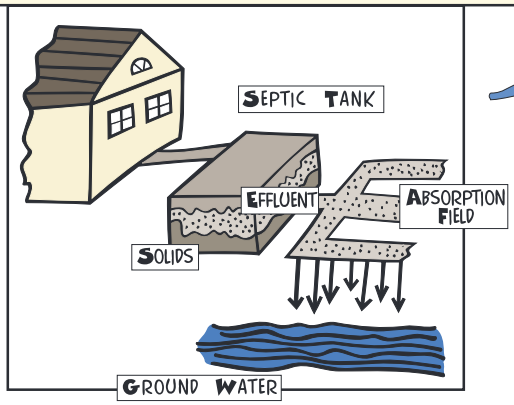
Thank You For Shopping Smart!

Don't Dump It Down the Drain

About 500,000 New Jersey homes use septic systems for the wastewater from their sinks, toilets, dishwashers, washing machines and showers. Rather than send their wastewater to a sewage treatment plant, homes with septic systems treat their wastewater in their own backyard.

How does a septic system work?

Septic systems work by using bacteria to decompose wastes sent into the system. A typical septic system has underground pipe leading from the home to an underground holding tank where most of the pollutants are treated. An underground system of small pipes leads from the tank into the backyard. These pipes allow treated water to soak into the ground.



Treat them with respect.

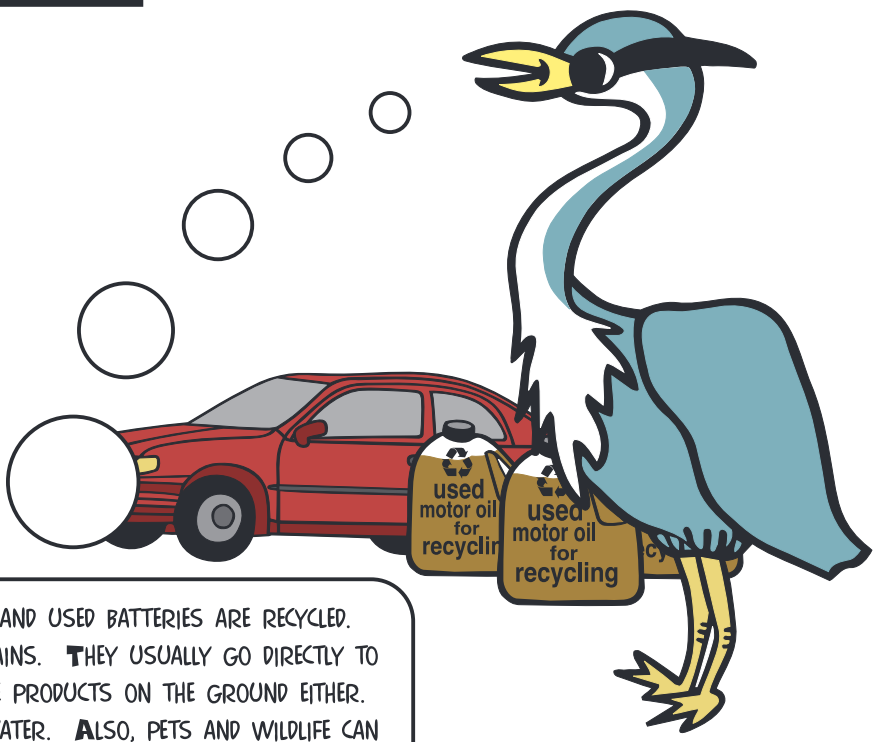
In order to keep these systems working, it's important to treat them right. To do this, you must be careful about what is put down the drain. The following things should not be put down household drains: hazardous household chemicals (for example, paints, varnishes, pesticides, drain cleaners), motor oil and other automotive fluids, cooking oils and grease, and large amounts of bulky materials such as kitter litter, diapers, or paper towels. These items may cause a septic system to stop working and can contaminate ground water.

Conserve.

It's also important to conserve water with a septic system. The less water the septic system treats, the longer the system will last.

Getting Around

You may not think of cars as a source of water pollution but they can be. Think of a parking lot or street. All that oil, grease, and other fluids that stain the pavement are washed into local waterways when it rains or as snow melts. Little bits of tires and brakes that wear off the car drop onto the pavement and are washed into waterways too. How do you avoid this pollution? Cars should be maintained properly and leaks fixed as soon as possible. That makes safety and environmental sense!



BE SURE USED MOTOR OIL, ANTIFREEZE, AND USED BATTERIES ARE RECYCLED. NEVER DUMP ANYTHING DOWN STORM DRAINS. THEY USUALLY GO DIRECTLY TO A LOCAL WATERWAY. NEVER DUMP THESE PRODUCTS ON THE GROUND EITHER. HERE THEY CAN SOAK INTO THE GROUND WATER. ALSO, PETS AND WILDLIFE CAN BE ATTRACTED TO SWEET TASTING ANTIFREEZE, BUT IT'S TOXIC TO THEM.

Scoop the Poop

Feces, guano, dung, poop, and road apples are all forms of animal waste which can be a serious water pollution problem. Too much animal waste from pets, wildlife, or livestock adds too many nutrients and disease-causing bacteria to the water.

If you walk your pet near a lake or stream, it's important to clean up after your dog. Don't leave animal waste on the sidewalk or roadway either. When it rains, the waste can be washed down the storm drain to the nearest waterway.

Trees, Turf, Bugs and Birds

Most people like a healthy landscape surrounding their home. It can increase the value of your home and produce environmental benefits such as preventing soil erosion, keeping your home cooler in the summer, and filtering pollutants from runoff. The right combination of plants can even attract wildlife, butterflies, and birds.

Unfortunately using too many fertilizers and pesticides on lawns and gardens can also be a source of pollution. It's important to use these products wisely - at the right time and the right amount - if they're needed at all. Make sure the products are needed and, if so, use them according to the label.

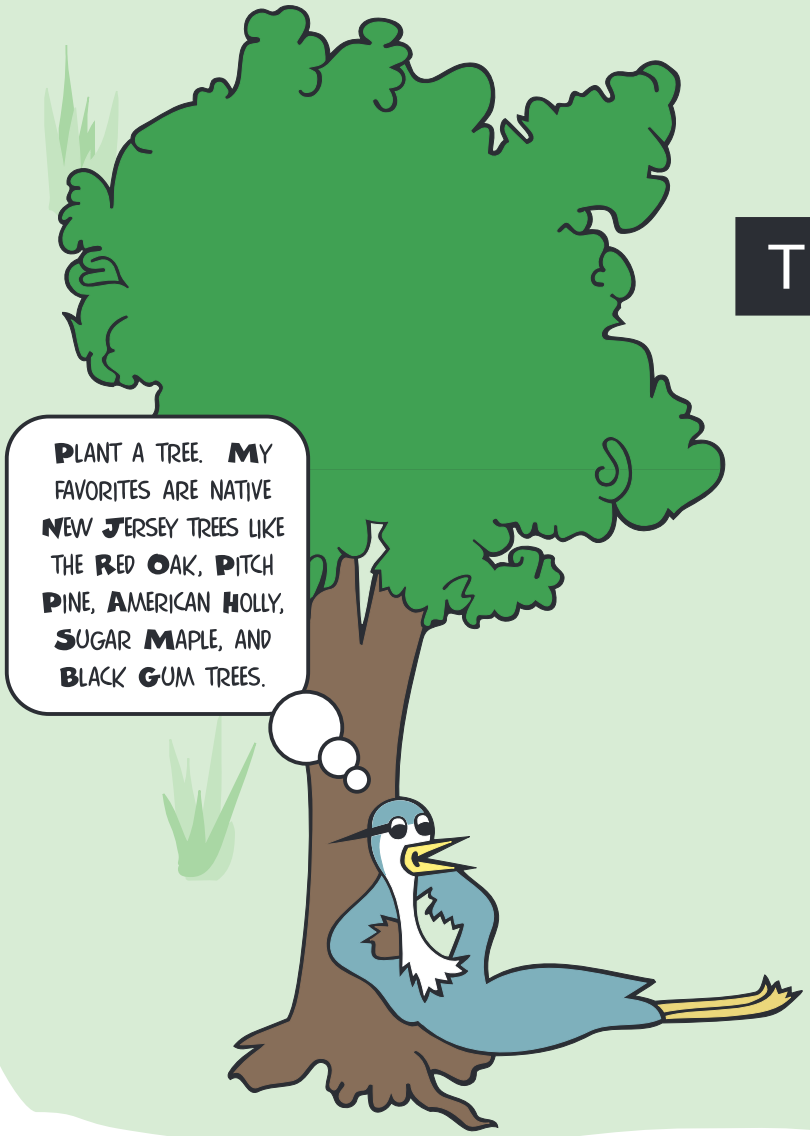
Many people consider all insects to be harmful to the lawn or garden, but most insects are not harmful. In fact, many of them eat other harmful insects. Don't automatically turn to pesticides. These chemicals can also be dangerous to human health and the environment. All home and garden pesticides are poisonous to some degree. The most important thing to remember is to read and follow the label carefully if you are going to use a pesticide.

Mowing the Lawn

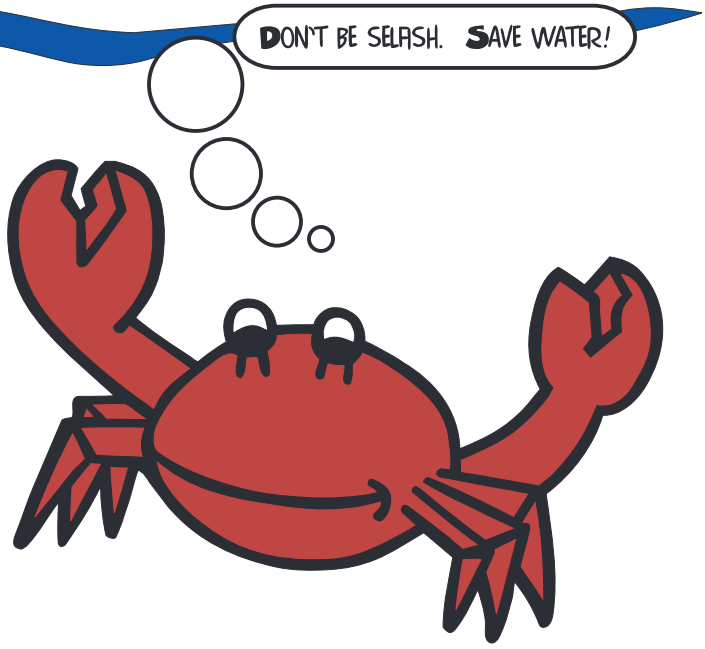
Always mow with a sharp blade set at the right height (about 2 to 3 inches). Never mow more than one third of the grass height. Cutting more will stress you lawn's health, opening the door to weeds and disease. A healthy lawn doesn't need pesticides.

Trees Are Tops

Trees provide a whole range of environmental benefits. They provide shade - especially important during a hot summer day. This keeps your house cooler and shelters other plants from the drying sun. Trees use nutrients and can prevent those nutrients from entering waterways. Their roots hold the soil in place, thereby preventing soil erosion.



Slow the Flow

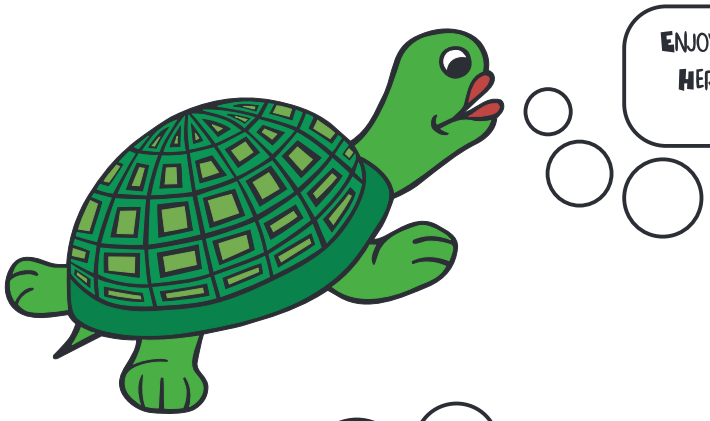


Like any valuable resource, water should be conserved both outdoors and indoors. We can't make new water so we need to conserve the clean water that's available to us.

Inside the home: Don't let the water run while you brush your teeth. Take short showers. Flush only when necessary. Don't use the toilet as a trash can.

Outside the home: Don't overwater the yard. Sweep sidewalks and driveways rather than hose them down. Use plants that don't need a lot of water.

Boating and Fishing Tips



Slow down and observe "No Wake" zones, which are designated to protect the shore. A wake is the wave caused by a boat moving too quickly through the water. Fast moving boats cause large waves that can cause the shoreline to erode.

Recycle old fishing line. Never throw it overboard.

Keep a trash bag handy and remember to recycle.

Never dispose of bait or fish waste overboard.

Glossary

AQUIFER - water filled underground layers of cracked rock, sand, gravel, or clay. Wells tap into aquifers to provide water for people to use.

EROSION - movement of soil commonly caused by running water or wind.

EVAPORATION - movement of water from land to the air when the sun heats up water and it becomes water vapor.

FERTILIZER - nutrient source for plants.

GROUND WATER - water that lies beneath the earth's surface.

PESTICIDE - chemical used to control a pest, such as an insect, weed or rodent.

POLLUTED RUNOFF - rain water or snow melt that carries pollutants.

PRECIPITATION - water that falls back to land from clouds as snow, sleet, hail or rain.

PRECYCLE - selection of products and packaging that produce the least amount of trash.

RECYCLE - reuse of materials such as plastic, glass or metal in either its original or different form rather than putting them in the garbage.

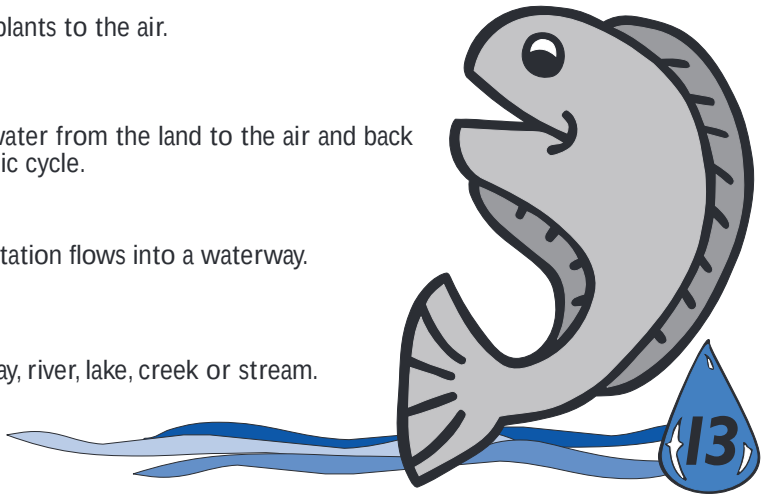
STORM SEWERS - underground pipe system that carries stormwater from streets and parking lots to local waterways.

TRANSPIRATION - movement of water from plants to the air.

WATER CYCLE - natural process of recycling water from the land to the air and back again, also called the hydrologic cycle.

WATERSHED - the land area from which precipitation flows into a waterway.

WATERWAY - a body of water, for example a bay, river, lake, creek or stream.



Top Ten Things You Can Do to Help Keep Water Clean

1. Never throw anything down storm drains. They are for rainwater only.

2. Don't litter. Always put trash where it belongs.

3. Always clean up after your pets. Obey your town's "pooper scooper" laws.

4. Tell others how important it is to keep our land and water clean.

5. Plant a tree. They take pollutants out of ground water, provide shade, and clean the air.

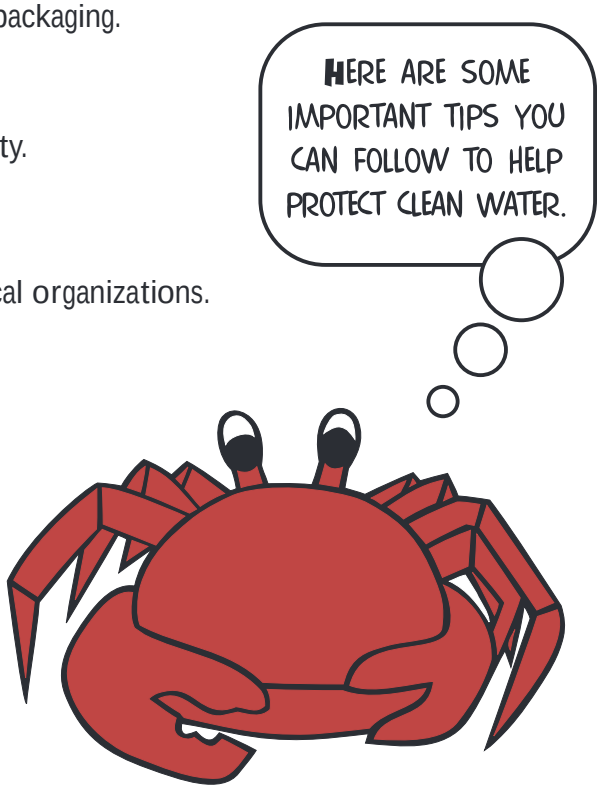
6. Find out what waterway you live near. Where does your water come from?

7. Precycle! Buy products that use the least amount of packaging.

8. Recycle. Find out what is recyclable in your community. Buy products in recycled or recyclable containers.

9. Learn about environmental issues. Get involved in local organizations.

10. Conserve water whenever possible. For example, turn off the water while brushing your teeth and don't linger in the shower.



You've Got the Know-How Now!

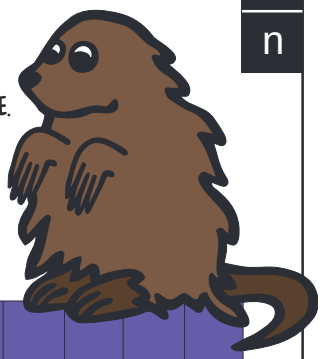
Now you know how to be a Clean Water Rainger! Join the team. Thanks for taking the time to read about how you can become a member of the team that's part of the solution to water pollution.

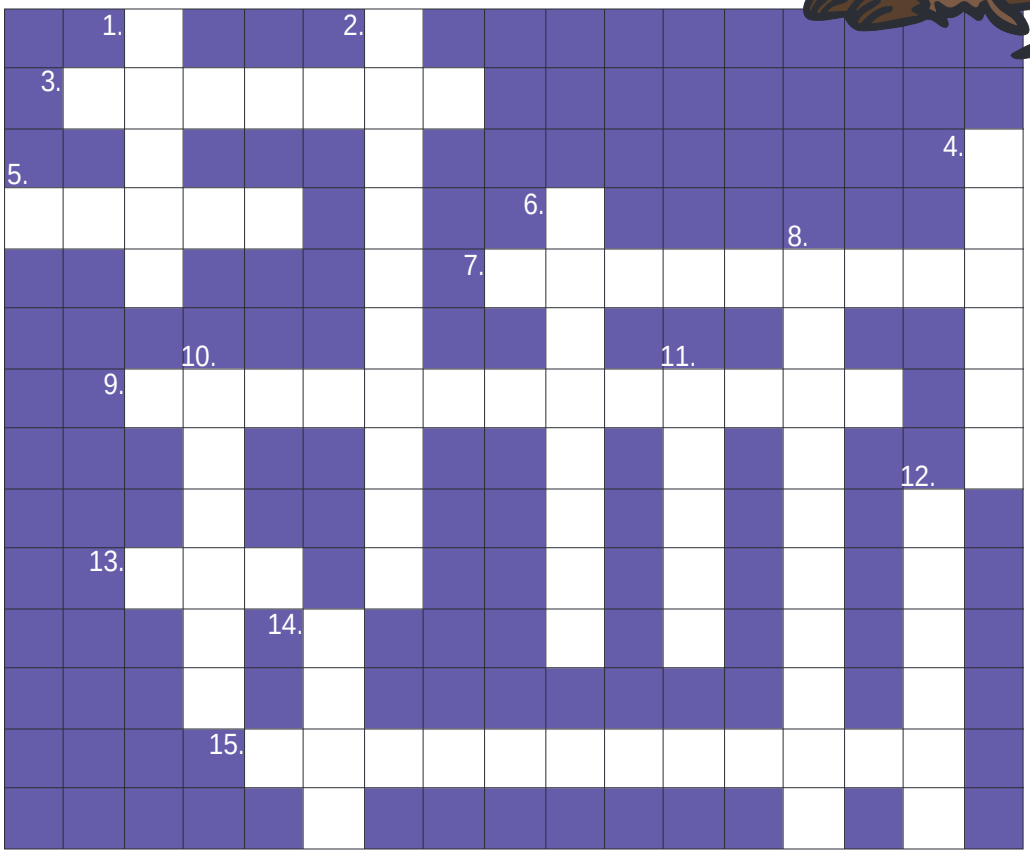
clean water raingers

crossword

down

1. FOR MILLIONS OF YEARS, _____ HAS BEEN REUSED AND RECYCLED.
2. USING TOO MUCH _____ ON YOUR LAWN CAN CAUSE WATER POLLUTION.
4. _____ YOUR USE OF PESTICIDES.
6. _____ , NUTRIENTS, SOIL PARTICLES AND TOXIC SUBSTANCES ARE FOUR TYPES OF POLLUTION IN RUNOFF.
8. A _____ _____ IS NOT A GARBAGE DISPOSAL.
10. RAINWATER _____ CAN BECOME POLLUTED AS IT FLOWS ACROSS THE LAND.
11. _____ CAN HELP PREVENT WATER POLLUTION BY USING NUTRIENTS AND HOLDING SOIL IN PLACE.
12. RAINWATER SEEPS INTO THE SOIL TO BECOME _____ WATER.
14. FRANCINE ____ EATS INSECTS AND IS AN ALTERNATIVE PEST CONTROL.





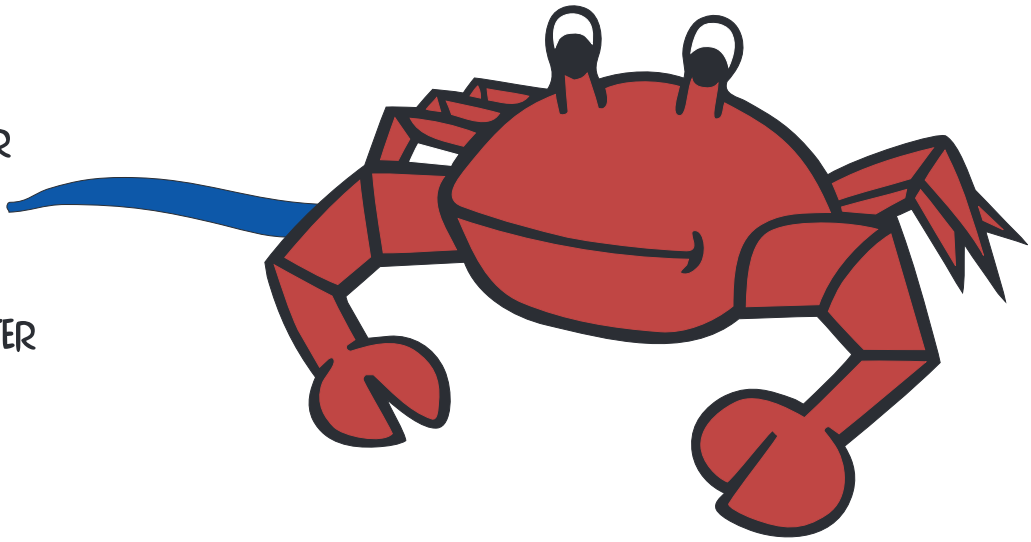
across

3. THE CLEAN WATER _____ TEAM IS WORKING TO KEEP NJ'S WATER CLEAN.
5. _____ UP AFTER PETS.
7. THE LAND SURROUNDING A WATERWAY IS ITS _____ .
9. RAIN AND SNOW ARE TWO TYPES OF _____ .
13. ____ CAN HELP KEEP WATER CLEAN.
15. USING PLANTS THAT DON'T USE A LOT OF WATER IS ONE WAY TO PRACTICE WATER _____ .

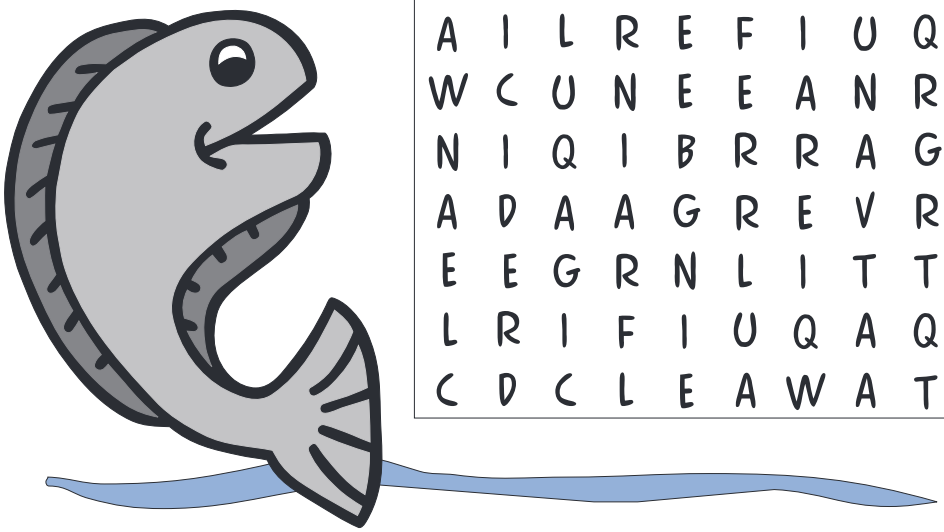
clean water raingers word search

FIND THESE WORDS ACROSS, DOWN, UP OR DIAGONALLY.

AQUIFER
BACTERIA
CLEAN WATER
CONSERVE
EROSION
FERTILIZER
GROUND WATER
LITTER
PESTICIDE
RAIN
RAINGERS
RECYCLE
RUNOFF
STORM DRAIN
STORM SEWER
WATER CYCLE
WATERSHED

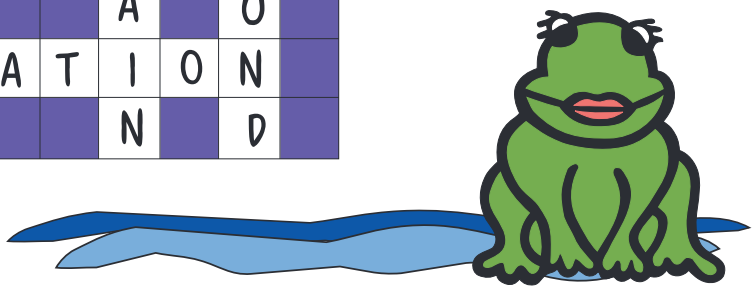


E	C	N	N	O	I	S	O	R	E	C	Y	Q	L	E
G	O	A	E	F	E	R	T	I	L	I	Z	E	R	S
N	N	R	A	I	N	D	B	Q	C	R	A	O	N	N
I	S	E	L	Q	C	T	R	E	Y	C	L	E	L	I
A	P	T	S	R	U	M	B	A	C	T	E	R	I	A
R	E	T	A	W	D	N	U	O	R	G	L	A	T	R
E	S	T	O	R	M	S	E	W	E	R	Q	Q	T	D
T	T	I	U	G	A	N	F	F	T	O	F	U	E	M
A	I	L	R	E	F	I	U	Q	A	U	E	H	L	R
W	C	U	N	E	E	A	N	R	W	N	S	F	C	O
N	I	Q	I	B	R	R	A	G	R	R	T	F	Y	T
A	D	A	A	G	R	E	V	R	E	S	N	O	C	S
E	E	G	R	N	L	I	T	T	E	R	W	N	E	N
L	R	I	F	I	U	Q	A	Q	C	L	S	U	R	A
C	D	C	L	E	A	W	A	T	R	E	I	R	O	H



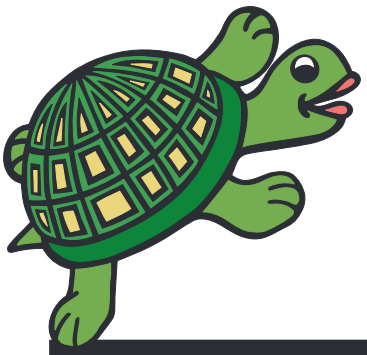
crossword answers

	1.	W			2.	F									
3.	R	A	I	N	G	E	R								
		T				R								4.	R
5.															
C	L	E	A	N		T		6.	B						E
		R				I	7.	W	A	T	E	R	8. S	H	E	D
						L			C		11.		T			U
	9.	P	10. R	E	C	I	P	I	T	A	T	I	O	N		C
			U			Z			E		R		R		12.	E
			N			E			R		E		M		G	
	13.	Y	O	U		R			I		E		D		R	
			F	14.	F				A		S		R		O	
			F		R								A		U	
			15. C	O	N	S	E	R	V	A	T	I	O	N		
					G								N		D	



word search answers

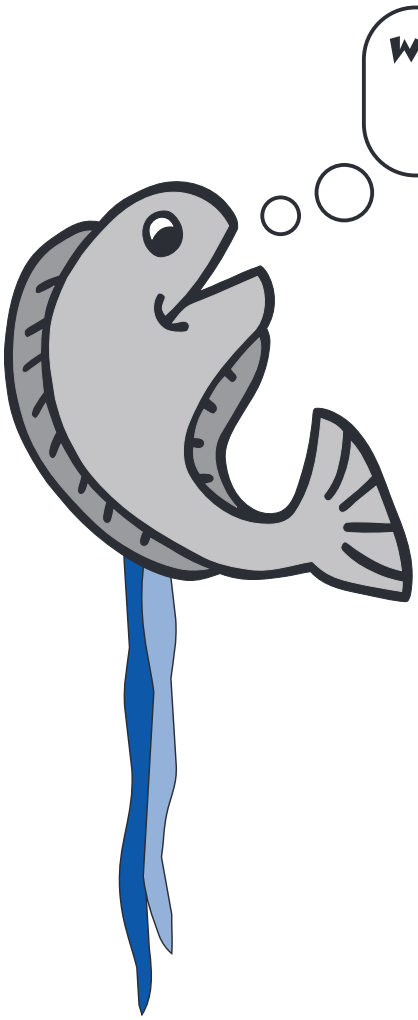
E	C	N	N	O	I	S	O	R	E	C	Y	Q	L	E
G	O	A	E	F	E	R	T	I	L	I	Z	E	R	S
N	N	R	A	I	N	D	B	Q	C	R	A	O	N	N
I	S	E	L	Q	C	T	R	E	Y	C	L	E	L	I
A	P	T	S	R	U	M	B	A	C	T	E	R	I	A
R	E	T	A	W	D	N	U	O	R	G	L	A	T	R
E	S	T	O	R	M	S	E	W	E	R	Q	Q	T	D
T	T	I	U	G	A	N	F	F	T	O	F	U	E	M
A	I	L	R	E	F	I	U	Q	A	U	E	H	L	R
W	C	U	N	E	E	A	N	R	W	N	S	F	C	O
N	I	Q	I	B	R	R	A	G	R	R	T	F	Y	T
A	D	A	A	G	R	E	V	R	E	S	N	O	C	S
E	E	G	R	N	L	I	T	T	E	R	W	N	E	N
L	R	I	F	I	U	Q	A	Q	C	L	S	U	R	A
C	D	C	L	E	A	W	A	T	R	E	I	R	O	H

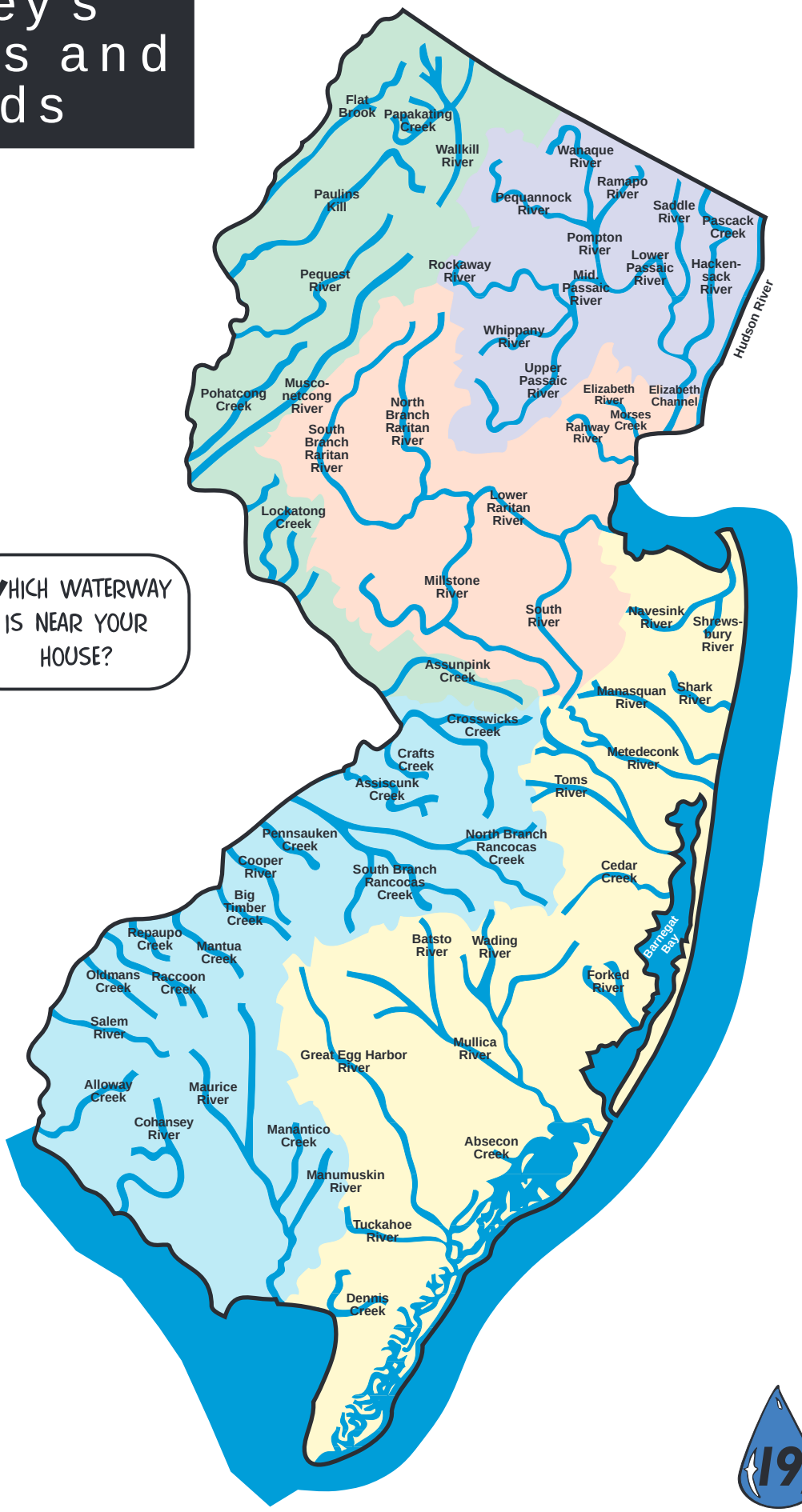


New Jersey's Waterways and Watersheds

Watersheds

- Atlantic Coastal
- Lower Delaware
- Northeast
- Northwest
- Raritan





New Jersey Department of Environmental Protection
Division of Watershed Management
PO Box 418
Trenton, NJ 08625-0418
609-292-2113
Donald T. DiFrancesco, Acting Governor
Robert C. Shinn, Jr., Commissioner

New Jersey Clean Communities Litter Activity Book

Clean Communities

The activity book has been produced to educate youth about the harmful effects of litter on wildlife and the environment. Please do your part to make your community cleaner. Our mission is to reduce litter through education. Clean Communities are safe, healthy, sustainable communities.

The NJ Clean Communities Council not only provides grants to towns and counties to help fight litter but also administers the Adopt-a-Beach and Adopt-a-Highway programs.

Courtesy of NJ Clean Communities Council, Inc.

www.njclean.org

Time Table for Litter Decomposition

How long do you think it takes for these items to decompose? Match the item to the time. Use your best guess.

-- Paper

--Cotton Shirt

--Wool Mittens

--Tin Can

--Aluminum Can

--Plastic Six Pack

--Glass Bottle

450 Years

2-4 Weeks

Undetermind

200-500 Years

1 Year

100 Years

1-5 Months

So, Make New Jersey Glitter and Can the Litter ! ! !

Answer Key -> paper = 2-4 weeks, cotton shirt = 1-5 months, wool mittens = 1 year, tin can = 100 years, aluminum can = 200-500 years, plastic six pack = 450 years, glass bottle = undetermined

Don't Be a Litter Bug Word Search

E A J T Z T Y H C S J X P U U
D S C E P S Q S Q U T J L B G
W A U A E L R A K M C L A Y L
P I N E N V I R O N M E N T Y
C U R G R S E T B U F T T Q K
L T N A E L X W Y P A X S V E
K I A A C R R G U O Y G G F G
R I T Y E A O J S L A M I N A
R J C T P L Q U Y L X W C D B
V E S P E A C G S U W A T E R
R I E C N R D U H T R A E E A
T R R U B B I S H I W H D S G
S G U B V F T F X O K U D M F
J A R C K U Y Z A N C G T F V
Z N G R P M M G L E N R Q M X

Find the hidden words from the list below.
They can be horizontal, vertical, or diagonal – forward or backward:

AIR
ANIMALS
BUG
CANS
CLEANUP
DANGEROUS
EARTH
ENVIRONMENT
GARBAGE
LITTER
PLANTS
POLLUTION
RECYCLE
REDUCE
REUSE
RUBBISH
TRASH
TREES
UGLY
WATER
WRAPPERS

Keep it Clean !

Use the words from the list below to complete the tips on how each of us can help prevent litter pollution.

1. **Always set an _____ by not littering.**
2. **If your parents own a car, make sure they have a _____.**
3. **When you visit the park, put your _____ in a trash can.**
4. **Help your family put _____ in a bin at curbside.**
5. **When you put out the trash at _____ make sure the garbage can lid is on tight.**
6. **If your school _____ doesn't have a trash can, ask your principal to put one out along with a recycling container.**
7. **Ask your parents to take you to a recycling _____.**
8. **Participate in a _____ trash cleanup day.**

COMMUNITY	EXAMPLE
HOME	LITTER
LITTERBAG	CENTER
PLAYGROUND	RECYCLABLES

Trash Math

Soda cans here, water bottles there - it all adds up !

Did you know that the average person throws away 5 pounds (lbs) of trash a day?

Figure out how many pounds of trash you throw away:

in one week ... **5 lbs** **x** _____ **=** _____ **lbs per week**
Number of days in a week

in one month... _____ **lbs per week x** _____ **=** _____ **lbs per month**
Number of weeks in a month

in one year... _____ **lbs per month x** _____ **=** _____ **lbs per year**
Number of months in a year

Want to convert these numbers to tons? Divide each one by 2,000 !

Recycling Fun Facts

Recycling helps reduce the amount of trash we throw away so make sure you recycle.

- **The average American uses 650 pounds of paper a year !**
- **Recycling one ton of paper saves 17 trees, 6,953 gallons of water, 463 gallons of oil, and 4,077 kilowatts of energy !**
- **About 50 % of the paper used in the United States is recycled**

Match the Message Coloring Page

Keep NJ Litter Free !

A ___ Don't Pollute My Stream !
B ___ Keep The Trash Off My Back !
C ___ I Can't Bear Trash !
D ___ Litter in My Woods, Owl That Hurts !
E ___ Buck The Trend, Litter Sure Does Offend !
F ___ Keep Trash Out Of Our Hare !

(Write the correct letter in the sign each animal is holding)

To Trash or Not to Trash?

Trash: Broken, discarded, or worthless things, rubbish

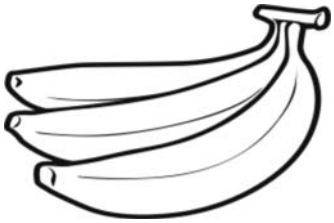
Recyclables: Materials which can be reused

Circle/Color the items below which can be saved from becoming trash

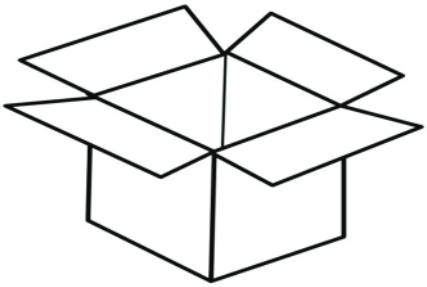
Milk Carton

Newspapers

Soda Can

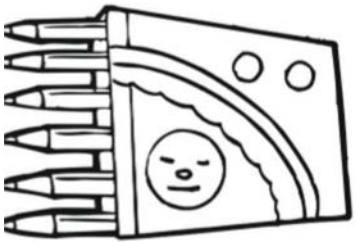


Banana Peels



Cardboard Box

Grass Clippings



Used Crayons

Plastic Bag

Old Books

Word Scramble

See how many litter related words you can unscramble using the clues provided:

ebragga: discarded food waste or any other unwanted or useless material.

_____

rppae: many different kinds can be recycled from your parent's offices and your home.

_____

sgars: if you leave it on the ground instead of bagging it, it can actually make your lawn greener and healthier.

_____

rtetli: pieces of trash that have been carelessly left on the ground, especially in a public place or outdoors.

_____

gbsa: whether plastic or paper, you can use them again until they fall apart. Then they can often be recycled.

_____

elrcyce: to save or collect waste material so that it can be used again.

_____

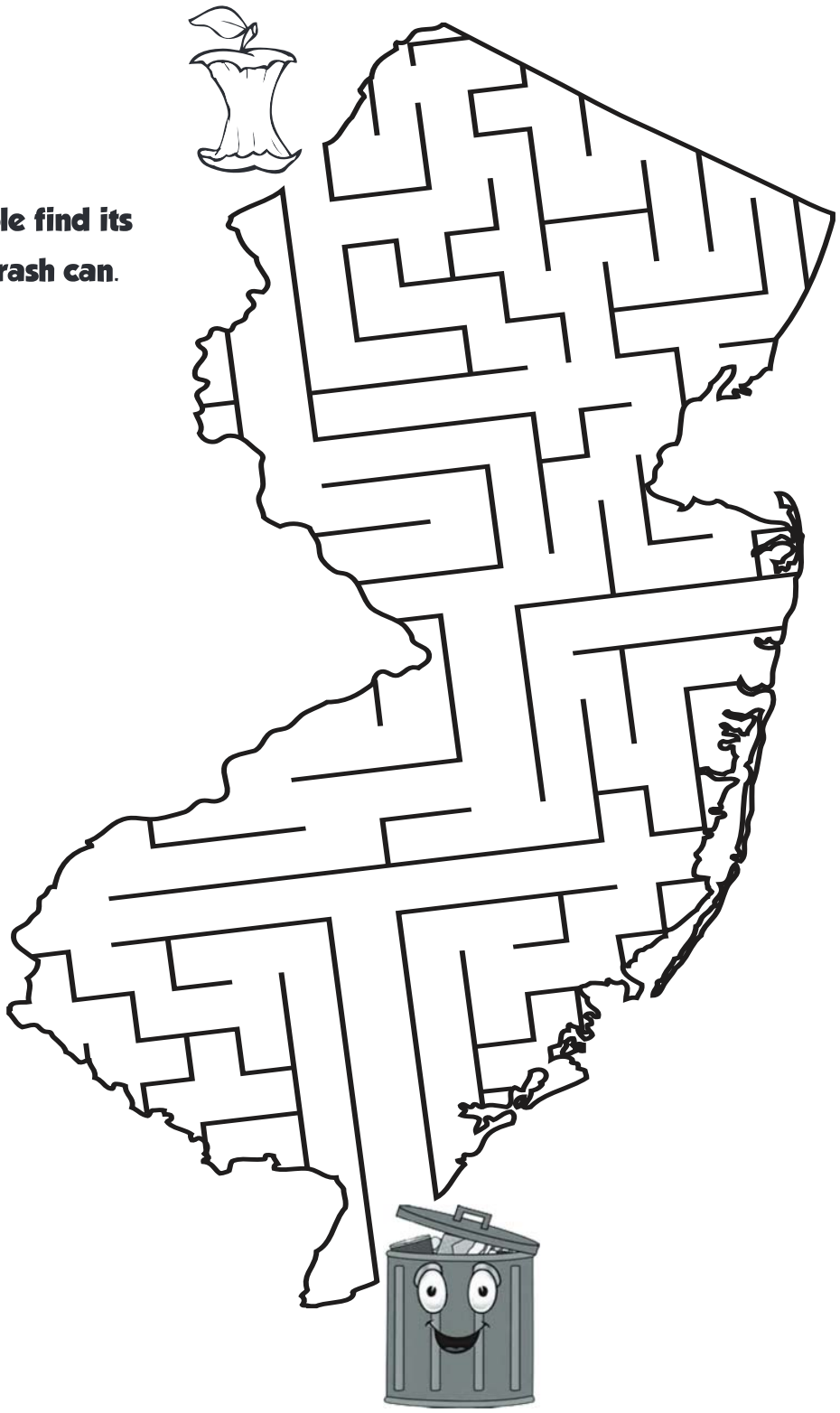
nelca: free from dirt or litter.

_____

(We made a list in case you need some help:
recycle, paper, litter, bags, garbage, clean, grass)

Help NJ Put Litter in its Place !

Help the apple find its way to the trash can.



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Diana Vigilante
Somerset County

The NJ Clean Communities Council is a 501c3 nonprofit corporation whose mission is to reduce litter through education. The NJ Clean Communities Council works with the state departments of environmental protection and treasury to administer the Clean Communities program, disbursing grants to 558 municipalities and 21 counties for the implementation of grassroots, community-driven litter abatement programs. The NJ Clean Communities Council also administers New Jersey's Adopt-a-Beach and Adopt-a-Highway programs.

New Jersey Clean Communities Council

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www.njclean.org

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APPENDIX 4

Maintenance and DPW Yard Operations Program

BOROUGH OF EATONTOWN

APPENDIX 4 – MAINTENANCE AND DPW YARD OPERATIONS

1. STREET SWEEPING

Statewide Basic Requirement:

Street Sweeping: Tier A Municipalities shall sweep, at a minimum of once per month (weather and street surface conditions permitting), all streets (including roads or highways) that meet all of the following criteria: (1) the street is owned or operated by the municipality; (2) the street is curbed and has storm drains; (3) the street has a posted speed limit of 35 miles per hour or less; (4) the street is not an entrance or exit ramp; an d (5) the street is in a predominantly commercial area.

Existing Street Sweeping Program:

A review of the Borough streets was conducted, and it was determined that the following Borough owned streets meet the NJDEP minimum requirements for monthly sweeping under the Tier A Stormwater General Permit:

- Hope Road (from Industrial Way West to Wyckoff Road)
- Corbett Way
- James Way
- Christopher Way
- Frankel Way
- Meridian Road
- Parker Road
- Wall Street (from Parker Road to dead end)
- Industrial Way West (from Hope Road to Route 35)

Therefore, the Borough will conduct monthly sweepings at these locations and continue with their existing street sweeping program for all other locations, which consists of the following:

- Up to three sweepings annually, weather and surface condition permitting.

- Records of sweepings collected and the date the work is completed is maintained by the Public Works Department.

- All sweepings collected are collected in an adjacent 10 CY container that is kept near the street sweeping activities during active sweeping. Once sweeping activities are

completed, the spoils in the container are disposed of at the County facility and records of material disposed are maintained.

2. CATCH BASINS AND STORM DRAIN INLETS

Statewide Basic Requirement:

Catch Basin and Storm Drain Inlet Inspection and Cleaning: The Tier A Municipality shall inspect storm drain inlets and any associated catch basins that it owns or operates and remove sediment, trash, or debris when present. Each catch basin and inlet shall be inspected at least once every five years. The Tier A Municipality shall clean any municipally owned or operated storm drain inlet or catch basin as frequently as necessary to eliminate recurring problems and restore proper function.

Existing Catch Basin and Storm Drain Inlet Program:

- The Borough conducts a annual inspection of all its inlets and catch basins.
- Cleaning of inlets and catch basins are done as part of a "Shared Service" agreement with Eatontown Sewerage Authority (ETSA).
- ETSA cleans all the inlets/catch basins with their jet vac and disposes of the material collected. Invoices are sent to the Borough outlining the amount of material collected.
- Inspection records for each inlet/catch basin is maintained by the Borough's Public Works and includes visual observation on the condition of the inlet/catch basin.
- Repairs needed are noted and work orders are generated where necessary.

3. STORMWATER FACILITIES

Statewide Basic Requirement:

Stormwater Facility Maintenance - The Tier A Municipality shall develop, update and implement a program to ensure adequate long-term cleaning, operation and maintenance of all municipally owned or operated stormwater facilities

Existing Stormwater Facilities:

The Borough currently maintains nine (9) detention basins that are either owned and operated by the Borough or privately owned, as well as, over 750 inlets and/or catch basins, miles of storm drain piping, approximately 17 outfalls and the Wampum Pond and dam. These facilities are maintained on a regular basis throughout the year and on an as needed basis in high risk areas by the Borough Public Works Department.

A listing of detention basins and their locations are included in this section.

Inspection Program:

As part of the Borough's regular maintenance program, personnel from the Public Works Department shall inspect the Borough's stormwater facilities as follows:

- Detention basins shall be inspected on a monthly basis during the Spring and Summer.
- Inlets shall be inspected on an annual basis. Inlets found to require cleaning will be contracted out for cleaning by ETSA. Record logs of the inspection and/or cleaning will be maintained by DPW personnel to document the number of inlets inspected and cleaned.
- Storm sewer pipes identified as problem areas and the Wampum dam shall be inspected after major storm events and on an as needed basis. Broken or collapsed storm sewer pipes shall be reported to the Director of Public Works and Borough Engineer.
- Outfalls shall be inspected once every 5 years for evidence of dry weather flow, scouring or erosion. Observations will be reported to the Director of Public Works and the Borough Engineer and necessary action will be taken if applicable.

Maintenance Program:

Based on field observations, the following routine maintenance will be performed as required:

- Mowing of areas around the detention basins and the Wampum dam to minimize excessive plant growth.
- Removal of trash or litter.
- Periodic cleaning of wet basins to minimize silt build-up.

- Inlets with evidence of debris will be cleaned by ETSA.
- Inlet markers to be replaced as needed once the labeling program is complete.
- Blocked storm sewer pipes shall be cleaned by Borough forces or outside vendors as needed to remove blockages.

The DPW will note all inspections and maintenance/repair calls for the stormwater facilities in their internal maintenance log.

4. DPW YARD OPERATIONS

Statewide Basic Requirement:

The Tier A Municipality shall implement best management practices for municipal maintenance yards and other ancillary operations owned or operated by the Tier A Municipality. Ancillary operations include but are not limited to impound yards, permanent and mobile fueling locations, and yard trimmings and wood waste management sites. The Inventory of Material and Machinery, and Inspections and Good Housekeeping practices shall be conducted at all municipal maintenance yards and other ancillary operations. Best Management Practices shall be implemented for the following activities, whenever such activities occur:

- Fueling Operations;
- Discharge of Stormwater from Secondary Containment;
- Vehicle Maintenance;
- On-Site Equipment and Vehicle Washing and Wash Wastewater Containment; and
- Salt and De-icing Material Storage and Handling.

Implementation of best management practices for the following activities, if applicable, shall commence on January 1, 2019:

- Aggregate Material and Construction Debris Storage;
- Street Sweepings, Catch Basin Clean Out, and Other Material Storage;
- Yard Trimmings and Wood Waste Management Sites that are owned and operated by the Tier A Municipality; and
- Roadside Vegetation Management

Existing Maintenance Yard Conditions and Activities:

As noted in SPPP Form 16 of this report, the Borough does not conduct any onsite washing activities within their municipal DPW facilities.

To comply with the permit renewal requirements, a copy of the Borough's standard operating procedures for "Vehicle Fueling", "Vehicle and Equipment Maintenance", and "Good Housekeeping Practices" are attached to this report, as well as, an inventory of the Borough's DPW facilities.

Aggregate Material and Construction Debris Storage:

Any sand, gravel, stone, topsoil, road millings, waste concrete, asphalt, brick, block and asphalt-based roofing scrap or processed aggregate shall be stored in such a manner as to minimize stormwater run-on and aggregate run-off. These may include but not be limited to use of sandbags, hay bales or curbing to regrade the surface and/or create dikes or berms. If feasible, storage bays may be considered as well. Outdoor storage of aggregate material shall be considered only if a 50-foot setback from surface water bodies, storm drain inlets and/or stormwater ditches can be maintained.

Currently, the Borough does store aggregate material and/or construction debris outdoors in open 3-walled storage bays at their DPW facilities. Storage of this material will be evaluated by the Borough and their representatives to determine if additional application of best management practice is necessary to comply with the requirement by the January 1, 2019 deadline as required.

Street Sweepings, Catch Basin Clean Out, and Other Material Storage:

Road cleanup material, which includes but is not limited to street sweepings, storm sewer clean out materials, stormwater basins clean out materials and other similar materials collected during road cleanup operations, that is placed into storage must:

- Stored in leak-proof containers or on an impervious surface that is contained (e.g. bermed) to control leachate and litter; and
- Be removed for disposal within six (6) months of placement into storage.

Spoils are temporarily stored in a 10 CY container in areas adjacent to ongoing sweeping activities. Once sweeping activities are completed, the container is removed offsite and disposed. Clean out spoils are collected via jet truck and disposed offsite once cleaning activities are completed. No permanent storage of spoil material is maintained at DPW facilities.

Borough Owned/Operated Yard Trimmings and Wood Waste Management Sites:

In accordance with permit renewal requirements, yard trimming storage areas will be located and/or constructed to limit discharge to State waterways, prevent stormwater run-on and leachate run-off, and not be located in areas susceptible to seasonal flooding.

The Borough currently maintains brush, branches and leaves at their Composting Facility on Parker Road. This material is stored outdoors with no storm drain inlet and/or catch basins system installed on property. The nearest drainage system is located over 50 feet away along Parker Road near the residential areas. Storage of this material will be evaluated further by the Borough and their representative to determine if additional best management practices may be are necessary to comply with the new requirement effective January 1, 2019.

Roadside Vegetation Management:

The Borough conducts minimal roadside vegetation maintenance. This will be evaluated further and effective January 1, 2019, application of herbicides will be prohibited on or adjacent to storm drain inlets, on steeply sloping grounds, along curb lines and unobstructed shoulders.

Application of herbicides will only be permitted within a 2-foot radius around structures where overgrowth presents a safety hazard and where it is unsafe to mow.

BOROUGH OF EATONTOWN

STANDARD OPERATING PROCEDURES

TITLE	REVISION NO.
Good Housekeeping Practices	000

DESCRIPTION:

This Standard Operating Procedure (SOP) contains the basic good housekeeping practices to be implemented at the Borough's maintenance yards including maintenance areas at ancillary operations.

PURPOSE:

This SOP provides a set of guidelines for the Borough of Eatontown's employees to implement Good Housekeeping Practices for their maintenance yards and ancillary operations' maintenance areas.

STANDARDS AND SPECIFICATIONS:

General

1. All containers should be properly marked and labeled. Labels should be clean and legible.
2. Keep all containers in good condition and sealed tightly when they are not in use.
3. Keep all chemicals, fluids, and supplies indoors.
4. Containers stored outdoors must be covered and placed on spill containment platforms.
5. Keep storage areas clean and organized.
6. Keep spill kits and drip pans near any liquid transfer areas. Keep them protected from rain.
7. Absorbent spill clean-up materials must be available in maintenance areas and must be properly disposed of after spills.
8. All trash, dirt, and other debris must be placed in the dumpster.
9. Collect waste fluids in properly labeled containers and dispose of them properly.
10. Maintain the recycling program by disposing of bottles, cans, paper, and trash in their designated containers.
11. Sweep and clean garages and yard once per week.

Salt and De-icing Material Handling

1. Prevent or minimize spills during material loading and unloading. If de-icing materials are spilled, remove the material using dry cleaning methods, and reuse or dispose of the material properly.
2. Inspect, sweep and clean area once per week to remove dirt and debris. Sweep area immediately following loading and unloading operations, when practical.
3. Minimize tracking material from the storage and loading areas.
4. Minimize the distance materials are transported during loading and unloading activities
5. Tarp any materials stored outside when they are not in use.
6. If interim seasonal tarping is used, de-icing materials may only be store outside between October 15th and April 30th.

BOROUGH OF EATONTOWN

STANDARD OPERATING PROCEDURES

Recycling Center

1. Sweep and clean area once per week to remove dirt and debris. Sweep area immediately following loading and unloading operations, when practical.
2. All trash, dirt, and other debris must be placed in the dumpster.
3. Collect waste fluids in labeled containers and dispose of them properly.

Spill Response and Reporting

1. Conduct clean-up of and spill(s) immediately after discovery.
2. Spills are to be cleaned-up using dry cleaning methods only.
3. For Environmental Emergencies Hazardous Materials spills:
   Level 1: Contact the Eatontown Police Department (732) 542-0100.
   Level 2: Contact the Monmouth County Health Department (732) 431-7456.
   Contact NJDEP at (877) WARN DEP or (877) 927-6337.

Maintenance and Inspection

1. Check for leaks and damaged equipment, periodically. Make repairs as necessary.
2. Perform monthly inspections of all storage areas and containers, both in and outdoors.
3. Perform overall facility inspection and maintenance annually.

BOROUGH OF EATONTOWN

STANDARD OPERATING PROCEDURES

TITLE	REVISION NO.
Vehicle and Equipment Fueling	000

DESCRIPTION:

This Standard Operating Procedure (SOP) contains the procedures and practices designed to minimize pollution to surface and ground waters.

PURPOSE:

This SOP provides a set of guidelines for the Borough of Eatontown's employees to implement procedures for delivering fuel into vehicles and equipment, storage tanks, and mobile fuel tanks safely while minimizing pollution to surface and ground waters.

STANDARDS AND SPECIFICATIONS:

Vehicle and Equipment Fueling

1. There is to be no smoking in the fueling area.
2. Shut off engine.
3. Ensure the proper type of fuel is used for each vehicle or piece of equipment.
4. Absorbent spill clean-up materials shall be available in all fueling areas, including on mobile fueling vehicles. Clean-up material shall be disposed of properly.
5. Nozzles used in fueling vehicles and equipment shall be equipped with automatic shut-off to prevent overfilling of tanks.
6. Fuel tanks shall not be "topped off."
7. Mobile fueling shall be minimized. Fueling shall only occur in designated areas, whenever possible.
8. In a prominent area, clearly post the instructions for safe operation of all fueling equipment, and appropriate Spill Response contact information.

Bulk Fueling

1. Always use drip pans or absorbent pads under all hose and pipe connections and other leak prone areas.
2. Block storm drain inlets or contain tank trucks using temporary berms or absorbent booms. All hose connection points associated with bulk fueling must be contained within the berm during bulk loading/ unloading, if storm drain inlets are not blocked.
3. Protect fueling areas with berms or dikes to prevent run-on, runoff, and contain spills.
4. A trained employee must oversee bulk fuel transfer.

BOROUGH OF EATONTOWN

STANDARD OPERATING PROCEDURES

Spill Response and Reporting

1. Conduct clean-up of and spill(s) immediately after discovery.
2. Spills are to be cleaned-up using dry cleaning methods only.
3. For Environmental Emergencies Hazardous Materials spills:
   Level 1: Contact the Eatontown Police Department (732) 542-0100.
   Level 2: Contact the Monmouth County Health Department (732) 431-7456.
   Contact NJDEP at (877) WARN DEP or (877) 927-6337.

Maintenance and Inspection

1. Inspect fueling areas, storage tanks, and pumps monthly.
2. Keep an ample supply of spill clean-up material on the site.
3. Check for leaks and damaged equipment, periodically. Any tanks, pumps, piping, equipment, and fuel dispensing equipment found to be damaged or leaking shall be repaired immediately.

BOROUGH OF EATONTOWN

STANDARD OPERATING PROCEDURES

TITLE	REVISION NO.
Vehicle Maintenance	000

DESCRIPTION:

This Standard Operating Procedure (SOP) contains the basic vehicle maintenance practices to be implemented at the Borough's maintenance yards including maintenance areas at ancillary operations.

PURPOSE:

This SOP provides a set of guidelines for the Borough of Eatontown's vehicle maintenance for their maintenance yards and ancillary operations' maintenance areas.

STANDARDS AND SPECIFICATIONS:

Vehicle Maintenance

1. Conduct all vehicle maintenance only in designated areas.
2. When possible perform vehicle and equipment maintenance indoors and on a paved floor.
3. Always use drip pans.
4. Absorbent spill clean-up materials shall be available in all maintenance areas. Material shall be properly disposed of after use.
5. Protect maintenance areas from both stormwater runoff and stormwater run-on. Areas should be located 50 feet downstream of any drainage facility or watercourse.
6. Do not dump or dispose of oils, grease, fluids, and lubricants on the ground. Waste oil and waste antifreeze shall be placed in labeled containers and disposed of properly.
7. Do not dump or dispose batteries, used oils, antifreeze or other toxic fluids into a storm drain, inlet or watercourse.
8. Do not bury or burn tires.

Spill Response and Reporting

1. Conduct clean-up of and spill(s) immediately after discovery.
2. Spills are to be cleaned-up using dry cleaning methods only.
3. For Environmental Emergencies Hazardous Materials spills:
   Level 1: Contact the Eatontown Police Department (732) 542-0100.
   Level 2: Contact the Monmouth County Health Department (732) 431-7456.
   Contact NJDEP at (877) WARN DEP or (877) 927-6337.

Maintenance and Inspection

1. Periodically check for leaks and damaged equipment and make necessary repairs.

STORMWATER POLLUTION PREVENTION PLAN

MAINTENANCE YARD(S) INVENTORY
BOROUGH OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY

Facility Name: Borough of Eatontown, Department of Public Works Yard
Date: April 30, 2022
Facility Location: Lewis St. Complex
Inspector: Edward W. Herrman, P.E., Borough Engineer, T&M Associates
Accompanied By: Keith Ferrugia, Eatontown Borough Director of Public Works

Small Engine Shop Yard

- Exposed Containers: (6) Dumpsters for recycling
  (2) Calcium chloride tanks

Small Yard

- Exposed Material Stockpile: Topsoil
  Fill dirt/sand/clay
  Concrete
  Stone
  Pea Gravel
  Hay bales for runoff control
- Exposed Equipment: Multiple claws for front end loaders

Notes: The Small Engine Shop and the Sign Shop/Garage are no longer in use. Any floor drains in these buildings have been capped with welded caps of concrete.

STORMWATER POLLUTION PREVENTION PLAN

MAINTENANCE YARD(S) INVENTORY
BOROUGH OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY

Facility Name: Borough of Eatontown Public Work Garage
Date: April 30, 2022
Facility Location: 250 Pine Brook Rd
Inspector: Edward W. Herrman, P.E., Borough Engineer, T&M Associates
Accompanied By: Keith Ferrugia, Eatontown Borough Director of Public Works

Yard/ Parking Lot

- Exposed Material Stockpiles: Steel beams and Miscellaneous Metals
  Metal Shelving units
- Exposed Equipment: Misc. heavy equipment
  Residential trash containers
- Exposed Containers (1) Diesel pumps (UST)
  Convault AST gasoline with 2 gas pumps

Garage

- Exposed Containers (4) 20 gal Drums of various automotive fluids
  (1) 55-gal Drum of automotive fluids
  (1) 55-gal Drum of Antifreeze
  (1) 300-gal plastic waste tank with secondary containment
  Multiple containers of various automotive and hydraulic fluids and oils with individual dispensing faucets and common drip trench
  (1) 300-gal Tank of Diesel Exhaust Fluid on leak pallet

Notes: The Garage has an existing waste oil floor drain system that connected to a waste oil AST; however, the system is no longer active and has been plugged. All fluid discharges are collected and poured into their respective waste drums. Leaks are handled using speedy dry material where necessary.

STORMWATER POLLUTION PREVENTION PLAN

MAINTENANCE YARD(S) INVENTORY
BOROUGH OF EATONTOWN, MONMOUTH COUNTY, NEW JERSEY

Facility Name: Borough of Eatontown, Compost Facility
Date: April 30, 2022
Facility Location: Parker Rd
Inspector: Edward W. Herrman, P.E., Borough Engineer, T&M Associates
Accompanied By: Keith Ferrugia, Eatontown Borough Director of Public Works

- Exposed Material Stockpiles: Brush
  Leaves
  Wood Chips
  Compost

- Exposed Equipment: Two (2) Front-end Loaders
  Bulldozer
  Claw/bucket

Note: No drainage system is installed within the property limits of the compost facility. Nearest drainage inlet or catch basin is located over 50 feet along Parker Road near the residential areas. The site is unpaved and surrounded by parkland.

APPENDIX 5

2005 Stormwater Pollution Prevention Plan Forms

Tier A Municipal Stormwater Regulation Program

Stormwater Pollution Prevention Team Members

Number of team members may vary.

Completed by: *Edward G. Broberg, P.E., P.P.*
Title: *Borough Engineer*
Date: *March 1, 2005*
Municipality: *Borough of Eatontown*
County: *Monmouth*
NJPDES #: NJG*0148008*
PI ID #: *190532*

Stormwater Program Coordinator: *Edward G. Broberg, P.E., P.P.*
Title: *Borough Engineer*
Office Phone #: *(732) 671-6400*
Emergency Phone #: *Same as above*

Public Notice Coordinator: *Karen Siano*
Title: *Borough Clerk*
Office Phone #: *(732)-389-7600*
Emergency Phone #: *Same as above*

Post-Construction Stormwater Management Coordinator: *Robert J. Stetz*
Title: *Client Manager*
Office Phone #: *(732) 671-6400*
Emergency Phone #: *Same as above*

Local Public Education Coordinator: *Kathee Stauffer*
Title: *Administrative Assistant*
Office Phone #: *(732)-389-7621*
Emergency Phone #: *Same as above*

Ordinance Coordinator: *Eugene Anthony*
Title: *Borough Attorney*
Office Phone #: *(732)-542-3324*
Emergency Phone #: *Same as above*

Public Works Coordinator: *Nate Albert*
Title: *Director of Public Works*
Office Phone #: *(732)-389-7651*
Emergency Phone #: *Same as above*

Employee Training Coordinator: *Kathee Stauffer*
Title: *Human Resources Officer*
Office Phone #: *(732)-389-7621*
Emergency Phone #: *Same as above*

Other: *Frank Cannaella*
Title: *General Foreman*
Office Phone #: *(732)-389-7651*
Emergency Phone #: *Same as above*

SPPP Form 2 - Public Notice

Municipality Information

Municipality: *Borough of Eatontown* County: *Monmouth*

NJPDES # : NJG*0148008* PI ID #:*190532*

Team Member/Title:*Karen Siano, Borough Clerk*

Effective Date of Permit Authorization (EDPA):*04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Briefly outline the principal ways in which you comply with applicable State and local public notice requirements when providing for public participation in the development and implementation of your stormwater program.

The Borough of Eatontown provides public notice of meetings as required by the Open Public Meetings Act ("Sunshine Law," N.J.S.A. 10:4-6 et seq.) and as required by N.J.S.A. 40:49-1 et. seq. for the passage of ordinances. The Borough will also provide public notice for municipal actions, such as the adoption of the stormwater management plan, as outlined by the Municipal Land Use Law (N.J.S.A. 40:55D-1 et. seq.).

SPPP Form 3 – New Development and Redevelopment Program

Municipality Information

Municipality: *Borough of Eatontown* County: *Monmouth*

NJPDES # : NJG*0148008* PI ID #: *190532*

Team Member/Title: *Robert J. Stetz*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Describe in general terms your post-construction stormwater management in new development and redevelopment program (post-construction program), and how it complies with the Tier A Permit minimum standard. This description must address compliance with the Residential Site Improvement Standards for stormwater management; ensuring adequate long-term operation and maintenance of BMPs (including BMPs on property that you own or operate); design of storm drain inlets (including inlets that you install); and preparation, adoption, approval, and implementation of a municipal stormwater management plan and municipal stormwater control ordinance(s). Attach additional pages as necessary. Some additional specific information (mainly about that plan and ordinance(s)) will be provided in your annual reports.

The Borough's post-construction stormwater management in new development and redevelopment program is as follows:

1. The Borough's Planning Board will require that all new residential development and redevelopment projects subject to the Residential Site Improvements Standards for stormwater management are in compliance prior to issuance of final subdivision or site plan approvals under the Municipal Land Use Law.

2. The Code Enforcement Officer will require continued compliance of all private developments with the latest approved subdivision plans and applicable ordinances, as well as, long term operation and maintenance of proposed best management practices (BMPs) on private property. The Director of Public Works will be responsible for appropriate long term operation and maintenance of BMPs constructed on Borough property.

3. The Planning Board will require all plans for new development and redevelopment projects incorporate the new design for storm drain inlets. The Engineer's office will require the proper installation of said inlets and the Director of Public Works will be responsible for proper maintenance/retrofit of existing and new inlets.

4. The Planning Board and Borough Engineer have reviewed the NJDEP's Sample Municipal Stormwater Management Plan and have drafted a municipal stormwater management plan in accordance with the sample. The plan was submitted to the County Review Agency. The Borough anticipates adoption of the proposed plan at its March 28, 2005 meeting. Draft ordinance(s) will be prepared and adopted by the Borough Council within 12 months of this adoption date. The plan and ordinance(s) will then be forwarded to the County Review Agency for formal approval.

5. Upon approval of the stormwater control ordinance and plan, the Planning Board will require that all plans for new development and redevelopment projects are in compliance with the design and maintenance measures adopted.

SPPP Form 4- Local Public Education Program

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Kathee Stauffer, Administrative Assistant*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Local Public Education Program

Describe your Local Public Education Program. Be specific on how you will distribute your educational information, and how you will conduct your annual event. Attach additional pages with the date(s) of your annual mailing and the date and location of your annual event.

ANNUAL BROCHURE DISTRIBUTION - The Borough of Eatontown will distribute the DEP provided brochure to all residents and businesses along with their Summer tax bill. Additional copies will be made available at the Public Library, Community Center, Public Works Administrative Building and the Borough Hall. The brochure will also be posted on the Borough's municipal website.

ANNUAL EVENT - The Borough will coordinate their educational event at a local publicly attended event to be determined at a later date. Borough personnel will setup a booth/table and distribute the DEP provided brochure and other educational materials available from the DEP's stormwater website (www.njstormwater.org).

See Appendix 2 for copies of the DEP brochure and other educational material.

SPPP Form 5 – Storm Drain Inlet Labeling

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Kathee Stauffer, Administrative Assistant*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Storm Drain Inlet Labeling

Describe your storm drain inlet labeling program, including your labeling schedule, the details of your long-term maintenance plan, and plans on coordinating with watershed groups or other volunteer organizations.

The Borough will coordinate with its Environmental Commission, Public Works Department and local Boy and Eagle Scout groups to initiate and complete a storm drain inlet labeling program.

The program will consists of stenciling all municipally owned storm drain inlets as required by the DEP. The stencil will contain a picture of a fish and the words "No Dumping - Drains to Waterways". Areas with difficult access points or heavy traffic will be stenciled by the Public Works Department.

The area east of Highway 35, Sector A, will be stenciled by April 1, 2007. The area west of Highway 35, Sector B, will be stenciled by April 1, 2009. See the Borough boundary map which delineates the sector areas in Appendix 1.

Periodic inspection and maintenance will be conducted by Borough forces during the annual storm drain inlet cleaning program. Labels will be checked to ensure that they are visible. Re-stenciling will be done as needed.

See Appendix 2 for a copy of the NJ Storm Drain Inlet Labeling Guidelines.

SPPP Form 6 – MS4 Outfall Pipe Mapping

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Explain how you will prepare your map (include its type and scale, and the schedule for the mapping process). Who will prepare your map (e.g., municipal employees, a consultant, etc.)?

The Borough of Eatontown previously completed a stormwater system map under the Sewage Infrastructure Improvements Act (SIIA). The Borough will update their existing stormwater map to include new outfalls constructed since the latest stormwater map revision date. Once completed, outfalls will be inspected and, if necessary, investigated (see Illicit Connection Elimination and Outfall Pipe Scouring Remediation Programs).

The Borough will provide a new 24"x36" Stormwater Map (Scale To Be Determined) outlining the locations of all water bodies receiving outfall discharges, the locations of each outfall and an alpha-numeric identifier for each outfall.

SPPP Form 7 – Illicit Connection Elimination Program

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Describe your Illicit Connection Elimination Program, and explain how you plan on responding to complaints and/or reports of illicit connections (e.g., hotlines, etc.). Attach additional pages as necessary.

Borough personnel will initiate an illicit connection inspection of each outfall. The Borough will utilize the DEP provided Illicit Connection Inspection Report Form to conduct the inspections and file the forms with the SPPP plan accordingly. Outfalls that are found to have a dry weather flow or evidence of an intermittent non-stormwater flow will be re-inspected. If an illicit connection is identified and located, the responsible party will be cited for being in violation of the Borough's Illicit Connection Ordinance and the connection will be eliminated. If after three investigations attempts, the illicit connection is not found, a Closeout Investigation Form will be prepared and submitted along with the Borough's Annual Inspection and Recertification Report. Illicit connections found to originate from another public entity will be reported by the Borough to the affected entity and the DEP.

Residents may contact either the Public Works Department or the Police Department to report any spills, leaks or evidence of illicit connections. The Borough will formalize procedures for public reporting of suspected illicit connections by October 1, 2005.

SPPP Form 8 – Illicit Connection Records

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Prior to May 2, 2006

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? ____

Number of outfalls found to have a dry weather flow? ____

Number of outfalls found to have an illicit connection? ____

How many illicit connections were eliminated? ____

Of the illicit connections found, how many remain? ____

May 2, 2006 – May 1, 2007

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? ____

Number of outfalls found to have a dry weather flow? ____

Number of outfalls found to have an illicit connection? ____

How many illicit connections were eliminated? ____

Of the illicit connections found, how many remain? ____

May 2, 2007 – May 1, 2008

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? ____

Number of outfalls found to have a dry weather flow? ____

Number of outfalls found to have an illicit connection? ____

How many illicit connections were eliminated? ____

Of the illicit connections found, how many remain? ____

May 2, 2008 – May 1, 2009

Note: *Attach a copy of each illicit connection report form for outfalls found to have a dry weather flow.*

Total number of inspections performed this year? ____

Number of outfalls found to have a dry weather flow? ____

Number of outfalls found to have an illicit connection? ____

How many illicit connections were eliminated? ____

Of the illicit connections found, how many remain? ____

SPPP Form 9 – Yard Waste Ordinance/Collection Program

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Please describe your yard waste collection program. Be sure to include the collection schedule and how you will notify the residents and businesses of this schedule. Attach additional pages as necessary.

The Borough presently distributes an annual calender to residents and businesses that outlines the Borough's recycling and garbage collection programs. The Borough's yard waste collection program consists of weekly pickups from October to December(FALL PICKUP) and from April to September (SPRING PICKUP). During this period non-containerized leaves are collected. Collection is conducted from the west side of Highway 35 to the east side of Highway 35.

The Borough has also designated various areas throughout the Borough where residents must place all yard waste in containers. Grass is not collected, rather the Borough encourages the County's "Cut It and Leave It" program. The Borough distributes the County's "Cut It and Leave It" and "Backyard Composting" brochures.

See Appendix 3 for a copy of the Borough's recycling newsletter and sample record log.

To comply with the new NJDEP regulations, the Borough will update their existing yard waste ordinance to prohibit residents and businesses from placing their yard waste at the curb or street seven (7) days prior to a scheduled pickup or within 10 feet from a storm drain inlet, unless the yard waste is bagged or otherwise containerized.

SPPP Form 10 - Ordinances

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Eugene Anthony, Borough Attorney*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

For each ordinance, give the date of adoption. If not adopted, explain the development status:

Pet Waste *Existing ordinance to be reviewed and updated as needed.*

Are information sheets regarding pet waste distributed with pet licenses? Y ( ) N ( )

Litter *Existing ordinance to be reviewed and updated as needed.*

Improper Waste Disposal *Existing ordinance to be reviewed and updated as needed.*

Wildlife Feeding *Existing ordinance to be reviewed and updated as needed.*

Yard Waste *Existing ordinance to be reviewed and updated as needed.*

Illicit Connections *Pending Borough review of the NJDEP model ordinance.*

How will these ordinances be enforced?

Local code enforcement/zoning officer(s) will enforce these ordinances. If someone violates one of these ordinances they will be given a warning before a summons is issued for the violation.

SPPP Form 11 – Storm Drain Inlet Retrofitting

Municipality Information

Municipality: Borough of Eatontown County Monmouth

NJPDES # : NJG0148008 PI ID #: 190532

Team Member/Title: Nate Albert, Director of Public Works

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

What type of storm drain inlet design will generally be used for retrofitting?

Campbell Foundry Type N-ECO inlet head with bicycle safe grate.

Repaving, repairing,reconstruction or alteration project name	Projected start date	Start date	Date of completion	# of storm drain inlets	# of storm drains w/ hydraulic exemptions
Parker Rd. Resurfacing	*Sept. 2004*	*09/29/ 04*	*Oct. 2004*	*21*	
South St. Traffic Calming	*May 2005*			*11*	
2005 Roadway Improvements	*June 2005*			*15*	
Industrial Way Resurfacing	*Aug. 2005*			*14*	

Are you claiming any alternative device exemptions or historic place exemptions for any of the above projects? Please explain:

No, the Borough does not plan on claiming any alternative device or historic place exemptions.

SPPP Form 12 – Street Sweeping and Road Erosion Control Maintenance

Municipality Information

Municipality: Borough of Eatontown County: Monmouth

NJPDES # : NJG0148008 PI ID #: 190532

Team Member/Title: Nate Albert, Director of Public Works

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Street Sweeping

Please describe the street sweeping schedule that you will maintain.
(NOTE: Attach a street sweeping log containing the following information: date and area swept, # of miles swept and the total amount of materials collected.)

The Borough has reviewed its zoning map and identified Industrial Way and its feeder roads as streets that will require monthly sweepings in accordance with DEP requirements. These streets will be grouped and scheduled for monthly sweeping. The Borough will also continue to maintain its existing street sweeping program which consists of three sweepings per year.

See Appendix 3 for a sample sweeping record log.

Road Erosion Control Maintenance

Describe your Road Erosion Control Maintenance Program, including inspection schedules. A list of all sites of roadside erosion and the repair technique(s) you will be using for each site should be attached to this form.
(NOTE: Attach a road erosion control maintenance log containing the following information: location, repairs, date)

The Borough will perform their Road Erosion Control Maintenance Program during their weekly street sweeping activities. Any road erosion problems will be reported to Nate Albert, Director of Public Works. Identified areas will be prioritized and repaired in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey. The Borough will keep a log of these inspections and maintain a list of repairs and the dates completed.

SPPP Form 13 – Stormwater Facility Maintenance

Municipality Information

Municipality: Borough of Eatontown County: Monmouth

NJPDES # : NJG0148008 PI ID #: 190532

Team Member/Title: Nate Albert, Director of Public Works

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Please describe your annual catch basin cleaning program and schedule. Attach a map/diagram or additional pages as necessary.

The Borough will continue to conduct their existing inspection/cleanup of all storm drain inlets which consists of multiple cleanings throughout the year. The program consists of visual inspection and cleanup utilizing a vac truck to remove sediment, debris and/or trash. A schedule and record log is maintained to record the number of storm drain inlets inspected and cleaned. At the time of inspection and/or cleaning, the Borough will also check if the inlets are functioning properly. A maintenance schedule/record will be kept for those inlets that are in disrepair.

See Appendix 3 for a sample record log.

Please describe your stormwater facility maintenance program for cleaning and maintenance of all stormwater facilities operated by the municipality. Attach additional pages as necessary.

(NOTE: Attach a maintenance log containing information on any repairs/maintenance performed on stormwater facilities to ensure their proper function and operation.)

The Borough will continue to maintain their existing stormwater system maintenance program to ensure systems are functioning properly. Presently, the Borough operates the Wampum Pond and dam, storm sewer outfalls, inlets and storm drains.

These facilities are maintained on a regular basis throughout the year and on an as needed basis in high risk areas by the Borough's Department of Public Works to ensure they are functioning properly. Outfalls and storm pipes are inspected bi-monthly, and maintained as needed. The dam is inspected before major storm events and the pond is cleaned monthly and mowed bi-monthly during growing season.

See Appendix 3 for sample record and maintenance logs.

SPPP Form 14 - Outfall Pipe Stream Scouring Remediation

Municipality Information

Municipality: Borough of Eatontown County: Monmouth

NJPDES # : NJG0148008 PI ID #: 190532

Team Member/Title: Nate Albert, Director of Public Works

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Describe your stormwater outfall pipe scouring detection, remediation and maintenance program to detect and control active, localized stream and stream bank scouring. Attach additional pages as necessary.

(NOTE: Attach a prioritized list of sites observed to have outfall pipe stream and stream bank scouring, date of anticipated repair, method of repair and date of completion.)

The Borough of Eatontown conducts bi-monthly outfall inspections. During these inspections, Borough personnel will also conduct outfall pipe scouring detection. Outfall pipes showing signs of scouring will be reported to Nate Albert, Director of Public Works, evaluated and prioritized for repairs in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey. Repairs that do not require NJDEP permits will be prioritized first.

All repairs will be followed with an annual inspection to ensure that the scouring has not resumed.

SPPP Form 15 – De-icing Material Storage

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

De-icing Material Storage

Describe how you currently store your municipality's de-icing materials, and describe your inspection schedule for the storage area. If your current storage practices do not meet the de-icing material storage SBR describe your construction schedule and your seasonal tarping interim measures. If you plan on sharing a storage structure, please include its location, as well as a complete list of all concerned public entities. If you store sand outdoors, describe how it meets the minimum standard.

The Borough presently stores its de-icing materials in a 2 bay covered garage that is opened in the front.

Presently, the Borough is considering construction of a new facility. Until that decision is made, the Borough will continue to store its de-icing material in the 2 bay garage located at their DPW facility. The Borough will provide temporary cover as needed to minimize the amount of material that may possibly wash into the Borough's storm sewer system. The Borough will also continue its inspection and maintenance procedures.

De-icing materials stored include M-1000, calcium chloride and rock salt. The calcium chloride is stored in three storage tanks (2500, 1500 and 1000 gallon tanks).

SPPP Form 16 – Standard Operating Procedures

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Nate Albert, Director of Public Works*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

BMP	Date SOP went into effect	Describe your inspection schedule
Fueling Operations (including the required practices listed in Attachment D of the permit)	*SOP pending Borough review & approval.*	*Fueling is conducted at the Board of Education site. However, the Borough will develop standard operating procedures for fueling.* *See Appendix 4 for SOP.*
Vehicle Maintenance (including the required practices listed in Attachment D of the permit)	*SOP pending Borough review & approval.*	*Inspections will be held on a monthly basis to ensure that the standard operating procedure is being met.* *See Appendix 4 for SOP.*
Good Housekeeping Practices (including the required practices listed in Attachment D of the permit) **Attach inventory list required by Attachment D of the permit**.	*SOP pending Borough review & approval.*	*Indoor & outdoor storage areas, containers & surrounding areas around the Borough's DPW facility will be inspected on a monthly basis. See Appendix 4 for SOP.*

SPPP Form 17 – Employee Training

Municipality Information

Municipality: *Borough of Eatontown* County *Monmouth*

NJPDES # : *NJG0148008* PI ID #: *190532*

Team Member/Title: *Kathee Stauffer, Human Resources Officer*

Effective Date of Permit Authorization (EDPA): *04-01-04*

Date of Completion: *March 1, 2005* Date of most recent update: ____

Describe your employee training program. For each required topic, list the employees that will receive training on that topic, and the date the training will be held. Attach additional pages as necessary.

The following topics will be covered in the Borough's annual employee training program:

Waste Disposal Education	*Code Enforcement Officer & Public Works employees*
Municipal Ordinances	*Code Enforcement Officer & Public Works employees*
Yard Waste Collection Program	*Public Works employees*
Street Sweeping Program	*Public Works employees*
Stormwater Facility Maintenance Program	*Public Works employees*
Road Erosion Control Program	*Public Works employees*
Outfall Pipe Stream Scouring Remediation	*Public Works employees*
Illicit Connection Elimination and Outfall Pipe Mapping	*Public Works employees*
Maintenance Yard Operations	*Public Works employees & other appropriate users*
Construction Activity/Post Construction Stormwater Management in New Development and Redevelopment	*Code Enforcement Officer & Public Works employees*

The illicit connection elimination training will include field training on procedures to properly conduct outfall inspections for illicit connections, follow-up investigation and procedures for elimination of the illicit connection. The maintenance yard operations training will include field training on the standard operating procedures for fueling, vehicle mainatenance and good housekeeping practices.

Method of conducting the training and the dates for the above training programs are yet to be determined.